



**Cluster's Influence on Internationalization and
Firm Heterogeneity:
The case of the Portuguese Footwear Cluster**

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Dissertation

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Biography

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Abstract

Globalization and localization are two important topics of research with a considerable amount of literature. However, there is an area where the literature is scarce: how industrial clusters influence the internationalization of its firms. According to the existing literature industrial clusters are important facilitators to the internationalization process of firms within a cluster, but how they can help those firms i.e. which characteristics and specific mechanisms are behind the international success of its firms remains unclear, which make this study relevant.

The research questions underlying this dissertation are: *“How Clusters can influence the internationalization process of its firms? Do all firms take similar advantage of belonging to a cluster?”* This study aims to clarify those interconnections, and to understand how firms' heterogeneity may condition their internationalization process. For that purpose this research defines a theoretical framework and a set of hypotheses, based on the literature review. Then the empirical application is a case study about the Portuguese Footwear's Cluster. A questionnaire was applied to a representative sample of firms and the respondents' data were subject to Factorial analysis and Cluster analysis.

The conclusions are that, in fact, the cluster has an influence in the internationalization of its firms through some specific features, and, that firm's heterogeneity influence their process of internationalization which means that firms do not take the same advantage of belonging to a cluster.

Keywords: cluster; internationalization; networks; resources; heterogeneity; Portuguese Footwear Cluster.

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Introduction

Research on the internationalization of firms has increased considerably in recent decades (Mayrhofer & Urban, 2011) with a special attention to motivations and entry modes of firms who engaged in international operations (Verdier & al., 2010). According to Leounidou (2004), small and medium enterprises (SME) faced in their internationalization process more constraints than multinationals. These constraints are mostly internal to the firm (firms' heterogeneity) (Kalantaridis, 2004) such as financial and human resources scarcity and lack of managerial skills (Buckley, 1997) and knowledge of foreign markets. These constraints may have a negative impact on their internationalization process and international opportunities (Johanson & Vahlne, 2009).

However, researchers agree on the fact that belonging to networks considerably improves the SME's capacities to internationalize (Johanson & Mattsson, 1988; Oviatt & McDougall, 2005; Zain & Ng, 2006; Prashantham & Young, 2011). Moreover, integration in territorial networks within industrial agglomerations is a crucial factor to facilitate the internationalization process of SME (Fernhaber, Gilbert & McDougall, 2008; Libaers & Meyer, 2011).

Some authors have studied the role of clusters on the internationalization process of SMEs (Mittelstaedt, Word & Nowlin, 2005; Fernhaber et al., 2008) and the resources that they can provide specially those that can be used by firms to expand internationally. Resources located in the territory of implementation of a firm are indeed a key determinant to the degree of its internationalization (Porter, 1990; Dunning, 1998). At the same time, the industrial concentration increases competition between firms located there to access the necessary resources to develop themselves (Fernhaber et al., 2008).

In recent years the link between location within a cluster and the internationalization of firms is becoming an interesting theme to researchers according to the literature review of this dissertation.

However, this issue needs to be further studied because beyond the fact of being located in a cluster, dynamic internationalization is influenced by the activities of territorial networks that exist within these areas and by the specifics characteristics of each firm

(financial resources, human resources, technology, Research & Development, productivity) (Giovannettia, Ricchiutia & Velucchi, 2013).

In particular, it seems important to understand the concrete ways in which these networks can contribute to the international development of SMEs and understand why not every firm inside the same Cluster has the same level of internationalization.

Following this pattern and with the aim to fulfill the gaps in the literature, this dissertation seeks to address the research question: ***“How Clusters can influence the internationalization process of its firms? Do all firms take similar advantage of belonging to a cluster?”*** In doing so this dissertation intends (i) to contribute to the academic discussion about cluster's , (ii) to understand how industrial clusters influence the internationalization process of firms i.e. which cluster's characteristics are crucial to facilitate firm's internationalization, (iii) to analyze within a cluster which type of firms are more likely to internationalize and (iii) to develop an empirical study based on a Portuguese cluster, through questionnaires directed to a sample of firms from the Portuguese footwear cluster.

The aim of this empirical study is to elaborate the best practices that a cluster model can have to influence its firm's internationalization and to analyze which firms are more likely to internationalize. At the same time, if applicable, this cluster could be a role model to others clusters and a contribution to improve the design of public policies.

This dissertation is organized as follows: a review of relevant literature, which is presented in chapter 1, important to understand what has been studied and to point out the crucial factors about internationalization of firms and in which way clusters work as facilitators in the internationalization process of its firms. It includes a review of empirical studies very important to analyse the variables that authors have considered in their researches and conclusions. Chapter 2 presents the empirical part of this dissertation which includes the methodology, hypotheses and the reason why the Footwear Cluster is an interesting case to study in this dissertation. Chapter 3 presents the empirical results and analysis of data collected from firms of the Portuguese Footwear Cluster through questionnaires. Finally the main conclusions are presented.

1. Literature Review

This chapter aims to provide a theoretical framework to this research through literature review and relevant concepts related with clusters and internationalization (Exports and Foreign Direct Investment).

The first topic is firm's heterogeneity and its differences which influence its capabilities of entry into foreign markets even if they are in the same industrial cluster. This topic is very important to understand that not all firms can internationalize, even if they have access to the same resources inside the cluster. The section about "clusters and competitiveness" presents the concepts of industrial clusters and describes clusters as a support for firm's competitiveness. The last sections emphasize the relationship between clusters and internationalization and how they are related, as well the influence by resources and networking as facilitators of firm's internationalization within a cluster.

The literature review is structured as described above to enable us to respond important questions according to the research question such as: (i) Does the cluster's influenced all firms despite its heterogeneity? (ii) Which are the facilitators of internationalization that clusters offer? (iii) Which are the main aspects that firms have to improve to successfully internationalize? (iv) Which type of firms influence others to internationalize inside the cluster?

1.1. Firm's Heterogeneity

In this era of globalization and trade liberalization, new literature approached the concept of firm's heterogeneity, i.e. firms that differ from each other in terms of size, productivity, different levels of technology and firm-specific learning processes (Aiello & Ricotta, 2016). A study by Aiello & Ricotta (2016) measures the influence that location has on firms' heterogeneity. The results indicate that heterogeneity in firm's productivity is affected by specific factors internal to the firms. Regarding the influence of location in firms' heterogeneity, the same study shows that different levels of productivity among firms can be explained by differences across countries (Aiello & Ricotta, 2016).

Moreover, in a world of internationally competitive markets not all firms are able to internationalize and regardless of the business environment in which firms operate they differentiate from each other by its internal resources. On the one hand, there are firms that belong to international industries which can enable them to penetrate more foreign markets and, on the other hand, firms may belong to highly domestic industries making it difficult their international growth. But the same can happen inversely, i.e. firms within an international industry that aren't in foreign markets and international firms that belong to a not internationalized industry (Greenaway & Kneller, 2007). The approach about heterogeneity of these authors is more restricted highlighting the firms' trade-off between exports and Foreign Direct Investment (FDI).

According to Greenaway and Kneller (2007) firms that export and firms that do not export co-exist in the same industries, the market entry mode¹ is not only related with the firm, and its industry, but with the market itself, as well. The question arises, why firms choose to export rather than engage in production in foreign markets. The reason is explained by sunk costs and productivity heterogeneity (Greenaway & Kneller, 2007). We are moving from the new trade theory where all firms export, to one, in which, some firms export and others do not because of their heterogeneity.

According to Wagner (2007, 2012) and Greenaway and Kneller (2007), one evidence becomes clear, firms that export or import are more productive than non-exporters and non-importers, not necessarily as a result of exporting but because they have the necessary capabilities to enter in foreign markets through exports, namely to support the associated sunk costs.

Melitz (2003) and Bernard (2003) created a model that explain the linkage between firm heterogeneity and industry productivity with exporting being the key factor. The model represents the relationship between firm productivity and probability density of productivity. Firms that export have a higher level of productivity. In opposite, domestic firms have lower productivity. The threshold to export becomes bigger when the probability density of productivity decreases and the firm productivity increases. Others recent authors extended this to consider asymmetries between countries, for instance, in

¹ The market entry mode in Greenaway and Kneller (2007) article refer to exports and FDI (Foreign Direct Investment)

competition (Melitz and Ottaviano, 2008) and the efficiency (Falvey, Greenaway, & Yu, 2004). This model illustrates, in an indirect way, that micro-heterogeneity influences aggregate outcomes i.e. when trade policy barriers fall, exporting firms with higher levels of productivity will survive and those with lower productivity and that do not export will shrink or exit (Bernard, Jensen, Redding, & Schott, 2012). In other words, due to increased competition “trade liberalization raises average productivity through reallocations of resources across firms within industries” (Bernard et al., 2012, p. 25).

In their study, Greenaway and Kneller (2007) show that firms with propensity to export tend to be larger and more productive than non-exporters, however, sunk costs are important to the decision whether firms export or invest in foreign markets. Exports involve lower fixed costs (sunk costs) and FDI (Foreign Direct Investment) involves lower variables costs (Greenaway & Kneller, 2007; Helpman, Melitz, & Yeaple, 2004).

Moreover, a study by Giovannettia et al. (2013) analyses the impact of the local's context-related such as industrial districts and infrastructures on the firms' internationalization process set in that localization, besides the firms' specifics characteristics (size; firms' productivity; Technology; R&D activities: patents and new products; expenditures). The main idea is that few firms are able to compete in international markets, and these firms are more productive and competitive than the domestic ones. “The performance of firms in a globalized world depends on firms' specific characteristics, on their flexibility to react to market changes but also on the socio-economic environment” (Giovannettia et al., 2013, p. 2666).

Table 1 Synthesis of determinants of Internationalization among firms

Author	Influencers of Internationalization	Correlation
Aiello & Ricotta (2016)	Firm heterogeneity in productivity	+
Wagner (2007) Wagner (2012)	Firm level of Productivity	+
Bernard, Jensen, Redding, & Schott (2012)	Trade Liberalization	+(raises productivity through reallocations of resources across firms within industries)
Greenaway & Kneller (2007)	Firm level of productivity	+
	Sunk Costs	-
Giovannettia, G., Ricchiutia G. & Velucchi M. (2013)	Firms' specific characteristics - size, productivity, technology, R&D activities (patents and new products), expenditures	+
	Flexibility to react to market changes	+
	Socio-economic environment	+

Source: Own elaboration based on the literature of this subchapter

1.2. Clusters and Competitiveness

After focusing on firm's heterogeneity (in chapter 1.1.) and how its level of productivity influences its propensity to export (internationalize) is crucial to link that topic with clusters and its impact on firm's competitiveness and productivity.

In the last decades, clusters have been seen as a way to improve the competitiveness, productivity and innovativeness of SMEs, overcoming its size restrictions (Karaev, Koh & Szamosi, 2007). According to Porter (1990) clusters are formed by firms and industries linked through vertical and horizontal relationships located in the same place. In Porter (1998)'s study his definition about clusters is extended by including institutions as universities defining it as "geographic concentrations of interconnected companies and institutions in a particular field" (Porter, 1998, p. 78). Geographical concentration such as clusters are considerate a support to competitiveness of firms, because of its better and faster access to innovation also it enable companies to reduce

input-costs and get co-operative relationships which can create competitive advantage (Porter, 1998).

Competitiveness depends on firm's productivity and firms can reach productivity through technology, sophisticated methods and the launch of unique products and services. However, these measures and its leverage are influenced by the local business environment and location of firms. In Porter (1998)'s perspective clusters affect competition "by increasing the productivity of firms; by driving the direction and pace of innovation, which underpins future productivity growth and; by stimulating the formation of new businesses, which expands and strengthens the cluster itself" (Porter, 1998, p. 80). Productivity of firms within a cluster increases because they have access to more inputs, suppliers, information, technology and network.

Moreover, Porter (1998) also do recommendations concerning industrial policies in which governments must to support and help the growth of firm' productivity setting the rules of competition and physical infrastructures including all clusters' sectors, specially the traditional ones such as agriculture because every cluster affects not only the national productivity but also other clusters productivity. Protect intellectual property, enforce antitrust laws, promote cluster formation and upgrade and buildup public goods that have a significant impact on linked business are the procedures proposed by Porter (1998).

1.3. Clusters and Internationalization

One of the clusters' definition by Porter (1990) is that clusters are concentrated in a relatively small area of specialized suppliers, universities, cooperatives, an experienced workforce, domestic and international companies, distribution channels and logistics services that serves international markets. However, as Porter and Ketels (2009, p.174) explained, clusters have different configurations from each other besides the influence that a specific sector has on the cluster performance. Clusters can be distinguished from each other: several are developed from SME networks, others are linked to a central firm who brings out the cluster ensuring basic creation of new businesses or attracting suppliers, and others have developed around universities in which human capital and ideas of researchers led to many spin-offs. Moreover, according to Dubé, Haijuan &

Lijun (2015), industrial clusters are a crucial factor to the internationalization process of its firms but it will depend on cluster governance² i.e. the cluster composition, the internal network density and the degree of knowledge sharing. The results of this research illustrates that a cluster with higher diversity of internal resources, stronger internal network and deeper knowledge sharing has higher degree of internationalization and consequently firm inside this cluster have access to more resources which can help them in its internationalization process.

Clusters can offer opportunities and facilitate the internationalization process to their member firms (Javalgi, Griffith, & White, 2003). According to Libaers and Meyer (2011) “in order to initiate the internationalization process, firms need access to resources, and these resources may reside within the firm and in the immediate external environment i.e. industrial cluster” (Libaers & Meyer, 2011, p. 1433). For example, firms located in clusters have easier access to venture capital and transfer of knowledge, which can increase their technological capacity (Fernhaber et al., 2008).

Moreover, subsidiaries of multinational firms are often located in clusters (Birskinshaw & Hood, 2000; Shaver & Flyer, 2000) and co-location with these companies increases the interest of entrepreneurs for opportunities in international markets (Vernon, 1966), as well as, the knowledge of these opportunities (Karagozoglu & Lindell, 1998; Westhead, Wright & Ucbasaran, 2001).

A good firm reputation also permits to establish trust with other firms, this confidence is essential to share information and create closer bonding between actors (Saxenian, 1990; Johanson & Vahlne, 2009; Colovic, 2010). These networks can facilitate the internationalization of small firms looking for opportunities. Similarly, a solid cluster reputation can help the internationalization process of firms, particularly small and medium enterprises (Zyglidopoulos, De Martino & McHardy Reid, 2006).

Literature suggests that networks can play an important role in the internationalization process of firms, specially SMEs. In addition, the integration of SMEs into territorial networks seems to facilitate the approach to foreign markets because the clustering allows them to access the necessary resources to expand internationally.

² This topic is deeper explained in chapter “Review of Empirical Studies” in this dissertation

Table 2 Synthesis of Clusters and Internationalization

Author	Influencers and Facilitators of Internationalization within a cluster
Libaers and Meyer (2011)	Leverage of cluster-based resources
	Level of Inventive Prowess
Fernhaber, Gilbert & McDougall (2008)	Venture Capital
	Transfer of knowledge
	Technological capacity
Vernon (1966)	Co-location with multinationals (increases the interest of entrepreneurs for opportunities in international markets)
Saxenian (1990) Johanson & Vahlne (2009) Colovic (2010)	Firm Reputation (permits to establish trust with other firms and these networks can facilitate the internationalization of small firms)
Zyglidopoulos, De Martino & McHardy Reid (2006)	Solid Cluster Reputation
Dubé, F. N. Haijuan, Y., & Lijuan, H. (2015)	Cluster Governance - Cluster Composition - Internal Network Density - Degree of Knowledge Sharing

Source: Own elaboration based on the literature of this subchapter

1.3.1. Clusters, Networking and Resources

Besides the individual network of firms, researchers examined the potential role of localization within an industrial agglomeration (such as industrial districts³, local productive systems, etc) in the internationalization of small firms. Thus, companies located in an industrial district seem to be more “global” (Illeris, 1992) and with higher export results than firms located outside districts (Becchetti & Rossi, 2000; Mittelstaedt et al., 2005). Moreover, Deshais, Joyal & Julien (1992) pointed out that 43.5% of exporting SMEs in three Quebec regions used the resources available in their location, being able to take benefits of their environment to expand internationally. The environment and location of firms seem to play an important role in the

³ Industrial districts was initially introduced by Marshall (1920) in Principles of Economics.

internationalization process of these firms. For instance according to Mariotti, Mutinelli, & Piscitello (2008) industrial districts have different structural and behavioural determinants which influence their performance and internationalization initiative.

Firms located in an industrial district appear to have well developed links with local firms within the district (Johanisson, 1994) suggesting that the internationalization efforts and their results are disseminated locally and internationalization becomes a collective property. Firms that have achieved high levels of internationalization seem indeed to have significant levels of local networking, particularly in the area of cooperation in Research & Development (R&D), internationalization is embedded on the local network and collaboration in research (Keeble, Lawson, Lawton Smith, Moore & Wilkinson, 1998; Libaers & Mayer, 2011).

However, according to size and age, the more the company is small and new, the more it is embedded in the local environment, while larger and more experienced companies are less dependent on local network (Keeble et al., 1998). These results suggest that the industrial agglomerations possess the characteristics of a defined “environment to internationalize” (Torrès, 1999), defined as “the set of actors and factors that facilitate the internationalization process of SMEs and the local business community” (Fourcade & Torrès, 2003, p. 3) or defined as “a sustainable cooperation system in which local actors (SMEs, local authorities, public or semi-public institutions, university research centers, banking systems) are working together to create a dynamic of internationalization” (Torrès, 2003, p. 29). SMEs can indeed develop their competitiveness in global markets from a strong local integration (Torrès, 2003). Thus it would seem that in general, the position of SMEs within industrial agglomeration positively influences internationalization (Belso-Martinez, 2006).

In the Uppsala internationalization model (Johanson & Vahlne, 2009) the authors argued that the integration in networks will allow a company to successfully internationalize through trust, learning and development of opportunities in an environment that facilitates the entry in foreign markets. The role of networks is particularly important for the internationalization of SMEs due to their lack of resources and skills to develop internationally (Coviello & Munro, 1995, 1997; Chetty & Blankenburg Holm, 2000; Lu & Beamish, 2001, 2006). Fernhaber et al. (2008) stated

that the combination of the resources benefits within a cluster with the importance of resources to the internationalization process suggests that clusters with higher concentration of industry enable easily firms to internationalize its operations because of its higher availability of resources.

Moreover, according to Welch & Welch (1996) “the development and utilization of foreign networks is, of course, closely related to the learning process that underlies overall internationalization. Indeed, an important part of a company’s knowledge is often created and maintained through actors in its relevant networks” (Welch & Welch, 1996, p.12). These actors can be foreign intermediaries, customers, alliance partners, suppliers, government officials and others entities. Strong international networks seem well be one of the important characteristics of a global approach (Oviatt & McDougall, 2005). The selection of foreign markets and the participation in international activities emanate from the opportunities created by network contacts, not only from managers’ strategic decisions (Coviello & Munro, 1995).

The network of relationships, including those in the country of origin, (Lin & Chaney, 2007; Zhou, Wu & Luo, 2007) trigger and motivate internationalization of firms, influence their market selection and the input mode, help them gain credibility, allow access to other established relationships and channels, help to reduce costs and risks, and finally influence their rhythms and patterns of internationalization (Zain and Ng, 2006).

A study by Zen, Fensterseifer, and Prévot (2011) analyzes the resources generated by the cluster and the influence on its firm’s internationalization process, affirming that firms within a cluster have access to more resources that can help them on its internationalization process comparing with those that are not inside the cluster. Other aspect of its conclusions is that managers should consider as well the influence of the cluster’s reputation and the importance of internal network into firm’s internationalization strategy.

Table 3 Synthesis of Clusters, Networking and Resources

Author	Clusters as source of Networking and Resources and its contribution to the internationalization of firms
Johanson & Vahlne (2009)	Networks will allow a company to successfully internationalize
Coviello & Munro (1995)	Network contacts create opportunities to select foreign markets and the participation in international activities
Welch & Welch (1996)	Networking development as an outcome of the internationalization process of firms
Illeris (1992)	Firms more “Global”
Becchetti & Rossi (2000)	Higher export results
Mittelstaedt, Word & Nowlin (2005)	
Deshais, Joyal & Julien (1992)	Firms used the resources available in their location, being able to take benefits of their environment to expand internationally
Johanisson (1994)	Firms developed links with local firms within the district
Keeble, Lawson, Lawton Smith; Moore & Wilkinson (1998)	Levels of local networking Internationalization is embedded on the local network and collaboration in Research and Development (R&D)
Libaers & Mayer (2011)	
Torrès (2003)	Development of competitiveness in a strong local integration
Fernhaber, Gilbert & McDougall (2008)	Clusters with higher concentration of industry enable easily firms to internationalize its operations because of its higher availability of resources
Zen, Fensterseifer, and Prévot (2011)	Firms within a cluster have access to more resources that can help them on its internationalization process
Zain and Ng (2006)	Motivate internationalization of firms
	Influence market selection
	Increases credibility
	Access to other established relationships and channels
	Reduce costs and risks
	Influence the patterns of internationalization

Source: Own elaboration based on the literature of this subchapter

1.4. Review of Empirical Studies

This section takes closer attention to some authors' researches reviewed in the previous sections. The aim is to understand the empirical variables and the methodology used to relate clusters and networks characteristics and the internationalization process of firms. These studies were chosen because of their approach in line with the aim of the research question of this dissertation.

In the literature exists a range of theories and studies about clusters, internationalization and how both are interconnected. These topics are approached by authors from different points of view and perspectives. Its conclusions contributed to the general understanding about this issue being a facilitator to answer the research question of this dissertation.

The mechanisms that influenced the internationalization process of firms are studied by several researchers as Dubé et al., (2015), Libaers et al. (2011), Mariotti et al. (2008), Zyglidopoulos et al. (2006) and Zen et al. (2011). However, the literature and the number of recent studies focusing this question is limited and certain doubts remain about how clusters can truly help its firms to internationalize, specially SMEs.

For instance, Dubé et al. (2015) focus on how cluster governance influences the internationalization process of its firms using as a study two different clusters with different levels of internationalization. Industrial clusters are important to the internationalization process of firms within a cluster, but how they can help those firms i.e. which mechanisms they use remains unclear (Dubé et al., 2015). To analyze these mechanisms Dubé et al. (2015) studied three different aspects related with cluster governance: (1) cluster composition, (2) the internal network density and the degree of (3) knowledge sharing. The authors analyse two major industrial cluster in Malaysia with different levels of internationalization: the Penang International Halal Hub, with higher degree of internationalization and the Melacca Halal Hub with lower degree of internationalization. The aim of this research is to understand how different modes of cluster governance, in this case the two different industrial cluster, can affect the access of local companies to Arab and International markets i.e. how these models of industrial clustering facilitates the process of firms' internationalization.

The concept of cluster governance is defined “as the set of collective actions of institutional stakeholders (governments and affiliated bodies, large state-owned companies) aimed at supporting the creation, the development, and the efficient management of a given cluster in order to maintain its sustainable competitive advantage” (Dubé et al., 2015, p. 103). When these authors refer to the cluster composition, they are approaching the internal structure of a cluster and how it influences the company’s ability to achieve and maintain profitable market positions. To have this ability, companies need access to internal and external resources that they achieve through cluster composition. Regarding to the internal network density, this mechanism addresses the impact that inter-organizational and interpersonal relationships (informal and formal) have on firms’ internationalization (Coviello & Munro, 1997). A good and extended social network can help firms gain access to a foreign market more efficiently and effectively (Zou & Liu, 2007). The degree of knowledge sharing is related to the flowing and knowledge shared like the achievements and experiences from others firms and how it can promote firm internationalization (Dubé et al., 2015). Moreover, continuous and repeated interactions between firms enhance information and knowledge sharing and consequently support internationalization and innovation process.

The results of this research shows that the industrial cluster with higher internal composition i.e., higher diversity of internal resources, stronger internal network and deeper knowledge sharing, has higher degree of internationalization (Penang International Halal Hub) comparing with the cluster with lower degree of internationalization (Melacca Halal Hub) (Dubé et al., 2015).

According to Mariotti et al., (2008) other mechanisms are important to the successful internationalization of firms and they need a more deep understanding because of its weaknesses in the cluster model mostly caused by the cost advantages brought by the new global value chains. In their words they are “the fragility of the governance model and the organizational structure, lacks and deficiencies in innovation and advanced services, especially marketing, financial, and Internet-based activities, difficulties in absorbing and assimilating foreign technologies and in fulfilling the standards imposed by the large international supply and purchasing chains, and scant resources to be

devoted to extraordinary financing operations” (Mariotti et al., 2008, p.720). Particular adjusts are needed in many levels about how local networks need to be trans-local, how the internal network need to be embedded in a global supply circuit and how the district firms need to have a strong international presence.

Mariotti et al. (2008) studied how the structural and behavioural determinants influence the internationalization of production through FDI by industrial districts’ firms using as data 199 Italian industrial districts. To the structural determinants they used 4 measures: the presence of leader firms (Leadership effects) in the cluster, the role of the leader firms in the district’s internationalization, the degree of domestic rivalry (Porterian effects) within the district and the presence of foreign MNCs. Regarding the behavioural determinants they used 3 measures: the district’s propensity to export, the international experience of firms in the cluster and the district’s innovative capacity.

Regarding to the structural factors, the results show that the Leadership effects and the Porterian effects together increase the likelihood of cluster internationalization. But the leadership effects by itself “leads to a prevalent substitution effect: the internationalization of large firms prompts an inertial behavior by the other (smaller) firms, which do not develop any independent ability to grow internationally” (Mariotti et al., 2008, p.731).

Respecting the presence of foreign MNCs, this measure favours the internationalization of district’s firms but only if their stage of embeddedness is already advanced, this is one of the aspects that need further research. As far as behavioural determinants, the results show that the district’s innovative capacity is positively correlated with the district’s internationalization. The district’s propensity to export triggers the start-up of internationalization processes (exports -> commercial affiliates -> productive affiliates). But the previous export relationships do not show any impact on the district firms’ degree of internationalization, in fact, this is other field that need further research on the linkages between export and FDI (Mariotti et al., 2008). To sum up, this research suggests that industrial districts have different structural and behavioural determinants which influence their performance and internationalization initiative. Becomes crucial to act upon these determinants in industrial policy terms.

Other aspect that facilitates the internationalization of firms within a cluster is the cluster reputation. A study by Zyglidopoulos et al. (2006) argues that a good cluster reputation has a positive impact on its firms' internationalization. The research indicates that the cluster reputation is a facilitator to get easier access to the necessary financial funds to penetrate in new markets. Besides that a good reputation attract specialized human resources.

Other factor is the resources inside the cluster and how firms leverage it to facilitate its internationalization process. A research by Libaers et al. (2011) examines highly innovative small technology firms within an industrial cluster and how they leverage the cluster-based resources influenced by its level of inventive prowess. Level of inventive prowess is defined as "the deployment, refinement and management of superior technological capabilities that enable a small firm to sustain its technological edge over time" (Libaers et al., 2011, p.1426). The conclusions is that technological firms with higher level of inventive prowess benefit more from the industrial cluster comparing with firms with lower level of inventive prowess. In other words, firms with higher level of inventive prowess leverage the cluster-based resources helping them to initiate its internationalization process. (Libaers et al., 2011).

A study by Zen et al. (2011) also stated the importance of reputation's positive impact on firms' internationalization, previously studied by Zyglidopoulos et al. (2006) and approaches the advantages derived from industrial clusters strategies over the internationalization process of clustered firms. To analyze this advantages and influence the authors studied two firms located in different wine clusters: Soleil Winery in France, a country with wine world-renowned reputation; and Serra Winery in Brazil, a country with no international tradition in wine production. The conclusions of research identified the relationship with wineries in the region as a crucial resource for internationalization in both firms. It also provide "the importance and applicability of the Resource-based view to identify the potentially strategic resources of a cluster" (Zen et al., 2011, p. 138).

Besides all these important perspectives about clusters and the internationalization of its firms it's crucial to take into account the heterogeneity of firms. A research by Giovannettia et al. (2013) about location, internationalization and heterogeneity of firms

analyses the performance of Italian firms regarding to the role of individual characteristics (firm level) as well the context characteristics (cluster level). According to Giovannettia et al. (2013) “small and large firms do not equally depend on the socio-economic context in which they work: small firms largely benefit from the social capital that spills over industrial districts while large firms propensity and performance strongly depend on their own technological intensity” (Giovannettia, G., Ricchiutia G. & Velucchi M., 2013, p. 2671). One the results of this study is the fact that from a cluster perspective, firms in same geographic areas are over-performing with respect to their context while others do not fully benefit from it despite operating in a stimulating environment because of its specifics characteristics (internal to the firm).

Table 4 Review of Empirical Studies

Authors	Topic	Empirical Variables	Methodology
Dubé, F. N. Haijuan, Y., & Lijuan, H. (2015)	Level of Internationalization	Cluster Governance <ul style="list-style-type: none"> - Cluster Composition - Internal Network Density - Degree of Knowledge Sharing 	1) Cluster measurement tool developed by the European Union Task Force Group (ECA)(TACTICS Reflection Group, 2010). 2) Quantitative methods
Giovannettia, G., Ricchiutia G. & Velucchi M. (2013)	Firms Heterogeneity	Firms Heterogeneity <ul style="list-style-type: none"> - Firm's specific characteristics - Flexibility to react to market changes - Socio-economic environment 	Multilevel Approach
Libaers, D., & Meyer, M. (2011)	Level of Inventive Prowess Leverage of cluster-based resources Firm Internationalization	Firm Performance Firm's International Intensity	Econometric Model
Mariotti, S., Mutinelli, M., & Piscitello, L. (2008)	Internationalization of production through FDI	Structural determinants <ul style="list-style-type: none"> - Presence of Leader Firms in the Cluster - Role of the Leader Firms within the cluster - Degree of domestic rivalry - Presence of foreign MNCs Behavioural determinants <ul style="list-style-type: none"> - Cluster's propensity to export - Internationalization experience of firms in the cluster - Cluster's innovative capacity 	Econometric Model
Zen, A. C., Fensterseifer, J. E., & Prévot, F. (2011)	Influence of cluster resources on the internationalization of clustered companies	Knowledge and resources sharing Cooperative relations Cluster reputation	Case study through surveys
Zyglidopoulos, S. C., DeMartino, R., & Reid, D. M. (2006)	Impact of cluster's reputation on internationalization	Cluster Reputation	Literature review

Source: Own elaboration based on the literature review

2. Empirical Study on the Internationalization Process of firms within a Cluster and firm's heterogeneity: The case of the Portuguese Footwear Cluster

This chapter presents the empirical part of this dissertation. The research question of this dissertation forwarded us to an investigation work conception which allowed to find the answers to the questions related with the influence of clusters on its firm's internationalization and firm's heterogeneity which can influence its patterns of internationalization.

The first section describes the methodology chosen for this dissertation explaining why it is the most appropriate for this dissertation. The following section approaches the hypotheses which are the base for the survey's questions. The third section explains why the Portuguese Footwear Cluster is the case study chosen for this dissertation.

2.1. Methodology

The literature review in chapter 1 and the parallelism among cluster, internationalization, networking and resources allowed to plan precisely the objectives of this study and define the topics to conduct the survey (see Table 5 *Theoretical basis for the Research Variables*).

This subchapter presents the methodology chosen to this dissertation according to the research question and the objectives established. The goal of this dissertation is to understand which cluster's characteristics and behaviour are crucial to the internationalization process of firms within the cluster, i.e. how clusters can influence the internationalization process of its firms and the relevance of firms' heterogeneity.

In this case the aim of this dissertation is to study and analyze how the Portuguese Footwear Cluster influences the internationalization process of its firms. The methodology chosen is quantitative based on data collected through surveys to the selected firms inside the Portuguese Footwear Cluster. The survey research was considered the most appropriate to analyze how the Portuguese Footwear Cluster influence its firms and which mechanisms and methods are used.

“The survey approach refers to a group of methods which emphasize quantitative analysis, where data for a number of organizations are collected through methods such as mail questionnaires, telephone interviews, or from published statistics, and these data are analyzed using statistical techniques” (Gable, 1994, p. 113).

Considering the purpose of this investigation by studying a representative sample of firms, which in this case are firms within the Portuguese Footwear Cluster, the survey approach will seek to discover relationships that are common across those firms and therefore to provide generalizable statements about the object of this investigation. Through this type of methodology will be possible to answer the research question of this dissertation: *“How Clusters can influence the internationalization process of its firms? Do all firms take similar advantage of belonging to a cluster?”*

Table 5 Theoretical basis for the Research Variables

Empirical Variables (points to inquire)	Theoretical basis
Cluster Governance <ul style="list-style-type: none"> - Cluster Composition - Internal Network Density - Degree of Knowledge Sharing 	Dubé, F. N. Haijuan, Y., & Lijuan, H. (2015)
Structural determinants <ul style="list-style-type: none"> - Presence of Leader Firms in the Cluster - Role of the Leader Firms within the cluster - Degree of domestic rivalry - Presence of foreign MNCs Behavioural determinants <ul style="list-style-type: none"> - Cluster’s propensity to export - Internationalization experience of firms in the cluster - Cluster’s innovative capacity 	Mariotti, S., Mutinelli, M., & Piscitello, L. (2008)
Knowledge and resources sharing	Zen, A. C., Fensterseifer, J. E., & Prévot, F. (2011)
Cooperative relations	
Clusters Reputation	
Clusters Reputation	Zyglidopoulos, S. C., DeMartino, R., & Reid, D. M. (2006)
Firms Heterogeneity <ul style="list-style-type: none"> - Firm’s specific characteristics - Flexibility to react to market changes - Socio-economic environment 	Giovannettia, G., Ricchiutia G. & Velucchi M. (2013)

Source: Own elaboration based on the literature review

2.2. Hypotheses – Survey Guidelines

The literature review enabled to elaborate hypotheses related to the relationship and the influence of cluster's characteristics on firm's internationalization considering the firms heterogeneity as defined below. These hypotheses will be used in the survey's questions to the selected firms inside the Portuguese Footwear Cluster in which firms will be asked to evaluate the degree of disagreement/agreement in a Likert scale from 1 to 5⁴ in some of the questions. The results will allow to understand the correlation of each hypothesis enabling to answer the research question of these dissertation: *“How Clusters can influence the internationalization process of its firms? Do all firms take similar advantage of belonging to a cluster?”*

H1: Cluster Governance⁵ has a positive relationship with the internationalization process of its firms

H1 a: The share of important and rare resources among firms within the same cluster can ease their internationalization process

H1 b: Knowledge share inside the cluster has a positive impact on the internationalization process of its firms

H1 c: Cluster's cooperative relations and networking are positively associated with the internationalization process of its firms

H2: The internationalization experience of firms in the cluster enhances the willingness to internationalize of others firms within the cluster

H3: The presence of Leader firms⁶ in the cluster influence positively the internationalization of others firms in the cluster

⁴ 1 corresponds to “strongly disagree”; 2 to “disagree”; 3 to “neither agree nor disagree”; 4 to “agree”; 5 to “strongly agree”

⁵ Cluster Governance is defined as the cluster composition, the internal network density and the degree of knowledge sharing. The cluster composition is the internal structure of a cluster and how it influences the firm's ability to achieve and maintain profitable market positions through access to internal and external resources. The internal network density is the impact that inter-organizational and interpersonal relationships (informal and formal) have on firms' internationalization. The degree of knowledge sharing is related to the flowing and knowledge shared like the achievements and experiences from others firms and how it can promote firm internationalization. (Dubé, Haijuan, & Lijuan, 2015)

H4: The Degree of domestic rivalry among firms inside the cluster influences their internationalization process

H5: The presence of foreign MNCs inside the cluster has a positive impact on the internationalization of its firms

H6: A cluster's good reputation facilitates the internationalization process of its firms

H7: Cluster's innovative capacity has a positive impact on its firms and facilitates the internationalization of its firms

H8: Heterogeneity of firms is relevant to understand why firms within a cluster have different levels of Internationalization

After the hypotheses' elaboration, the questionnaire was developed and divided into six main parts. The survey starts with questions internal to the firm to analyse its characteristics with the aim to identify the heterogeneity among firms; the second part aims to understand which entities in the geographical proximity have more interaction with the firm, and are more relevant for its business. The following part has questions related to the hypotheses previously elaborated (see Table 6 *Hypotheses vs Questions*). These questions have the aim to understand the general perception that firms have regarding the influence that the cluster has in their internationalization process.

The fourth part, looks for a more personal opinion, of each firm, about the factors that are more important to its internationalization process. The next set of questions aims to know the firms' perception about the role that the cluster has in their internationalization, namely in terms of human and financial resources, productivity improvement among others. The survey ends with the assessment/opinion of each firm on the three main traits/ actions that the cluster should have to facilitate the internationalization process of firms.

⁶ Leader firms have high growth rates and are the engines of local industrial development as they generate innovation, enlarge and open new markets, and favour human capital spillovers. They also develop international production networks and implement multinational market-seeking strategies. (Mariotti, Mutinelli, & Piscitello, 2008)

Table 6 Hypotheses vs Questions

Hypotheses	Survey's Question	Author
H 1 a	“A partilha de recursos importantes e raros entre empresas do mesmo cluster facilita o processo de internacionalização das mesmas”	Dubé et al. (2015)
H 1 b	“A partilha de conhecimento dentro do cluster incentiva a internacionalização das suas empresas”	Dubé et al. (2015)
H 1 c	“As Relações de Cooperação e Networking dentro do Cluster estão positivamente associados ao processo de internacionalização das suas empresas”	Dubé et al. (2015)
H 2	“A experiência internacional das empresas dentro do Cluster aumenta o interesse/ vontade das menos experientes em iniciar atividades internacionais”	Mariotti et al. (2008)
H 3	“A presença de Empresas de Referência dentro do Cluster influencia positivamente a internacionalização de outras empresas pertencentes ao Cluster”	Mariotti et al. (2008)
H 4	“A intensidade competitiva entre as empresas do Cluster influencia positivamente o processo de internacionalização das mesmas”	Mariotti et al. (2008)
H 5	“A presença de Multinacionais estrangeiras dentro do Cluster tem impacto positivo na internacionalização das restantes empresas”	Mariotti et al. (2008)
H 6	1) “A boa reputação internacional do Cluster <u>funciona como incentivo</u> para a internacionalização das suas empresas” 2) “A boa reputação internacional do Cluster <u>facilita</u> o processo de internacionalização das suas empresas”	Zyglidopoulos et al. (2011) Zen et al. (2011)
H 7	“A capacidade de inovação do Cluster tem um impacto positivo na internacionalização das suas empresas”	Mariotti et al. (2008)
H 8	“A diversidade das características das empresas dentro do Cluster faz com que cada uma delas tenha diferentes capacidades de internacionalização”	Giovannettia et al. (2013)

Source: Own elaboration

2.3. Why the Portuguese Footwear as an empirical base?

The empirical part of this dissertation is a case study about the Portuguese Footwear Cluster based on the study of some of its firms. This Cluster fulfills the essential condition of geographical concentration. The footwear production in Portugal has a strong concentration in two regions, Felgueiras and São João da Madeira being important to the regional economic activity. Moreover, in this two regions and in firms located there, there is complex network, both formal and informal: commercial relations, in particular subcontracting arrangements, and relations with knowledge and information share.

The Portuguese Footwear cluster has its own institutional support – Business Association, Technological Center and Professional Training Center (APICCAPS) – whose action is recognized, nationally and internationally. Its production is more than leather, horizontally, the industry produce other shoes that use different raw materials and technologies: safety, sports and others. Vertically, the industry production also extends to the industries of leather goods and footwear components.

Over the last decades, the cluster has observed a narrowing of relations with its whole value chain linked to the footwear. Some relationships has been intensifying: equipment industry, fashion accessories industry, other suppliers, footwear distribution firms and firms linked to the world of fashion and design.

Footwear Industry Performance

Despite the strong economic crisis, the Portuguese footwear industry has improved its value chain especially in international markets. Portuguese firms continued to invest and strengthen their capabilities in innovation, design and fashion, and to invest in international marketing through its presence in international fairs. Some of these firms went forward and created its own brands. At the same time, the Portuguese footwear has changed radically its image, investing on a very bold look and slogans as “designed by the future” and “the sexiest industry in Europe”. (APICCAPS, 2013)

The international reputation of Portuguese footwear has changed and nowadays Portugal is seen as the origin of fashion and design. This positive image was reflected in

the average price of exported Portuguese shoes that increased from 18 euros, in 2006, to 23 euros, in 2012. The Portuguese footwear has disputed the top of global rankings against countries with stronger traditions of fashion and design. (APICCAPS, 2014)

According to APICCAPS, the Portuguese Footwear, Components and Leather Goods Manufacturers' Association, during 2014 the industry managed to increment sales abroad by 8%. Portuguese footwear industry's exports continued its dynamic performance in 2014 totaling 1,907.5 million euros and going up from 1,779.1 million euros registered in 2013.

Moreover, according to APICCAPS (2014), since 2010 the Portuguese footwear industry has shown a sustained growth tendency and during that period, employment rose by 7.7% and the level of production by 19.6%. At the end of 2013, the industry employed more than 35,000 people and its annual production exceeded 75 million pairs.

A good performance in the European Union markets, to where exports grew roughly 7%, is complemented by excellent growth of 12% in markets outside the Union, with a global increase of footwear exports of over 8%. The European Union economies bought 1,622.7 million euros worth of Portuguese footwear in 2014, while other markets purchased Portuguese footwear valued at 1,869.8 million euros. (APICCAPS, 2014)

The main destination markets for Portuguese footwear continue to be France, Germany, Netherlands, Spain and United Kingdom, all with positive growth rates. Also it is noticeable the good performance of the Portuguese footwear exports to the American market, with a growth of 51% in the period.

According to the Portuguese association: "Since 2009 Portuguese footwear exports increased roughly 54%". APICCAPS continues to work with its members on a strategy to diversify away the destination markets, as one of the goals of the Portuguese footwear industry is to deepen the presence in new markets, so that extra EU exports represent 20% of the total sales abroad by 2020.

Footwear Cluster Capabilities

According to APICCAPS (2013), the Portuguese Footwear Cluster's image is growing and become increasingly recognized, nationally and internationally. Some factors explain why this is happening: the cluster has (1) a diversified industrial base with recognized manufacturing capacity based on flexibility and readiness, (2) a know-how regarding to acting in international markets because of its 20 years of experience and investment in internationalization process, (3) a growing international reputation of Portugal seen as the origin of fashion and design products, and (4) a heritage complicity between industrial identities and institutional identities that support this cluster giving coherence to its action.

These facts distinguish the footwear industry from others Portuguese economic sectors. For more than 20 years, the footwear industry follows an international strategy with the aim of became an important player in different markets and prosper its value chain.

In the global footwear map, Portugal was seen, 30 years ago, as the location to mass production of low cost. The international trade liberalization enabled new locations with these competitive advantages, especially in Asia, leading to the relocation of some of foreign producers present in Portugal. In this new competitive world, the Portuguese footwear industry wanted to claim its position: the industry has reinvented itself focusing on readiness and flexibility. With the support of Technological Center and others institutional identities, the industry reorganized and reequipped itself being able to respond to any order, no matter how small it was. The industry strengthened its capacity in product development and enhanced their quality standards. Today, the Portuguese footwear industry is recognized for its manufacturing capabilities which is one of its strengths. But this process forced firms to assume new responsibilities and change the market approach. Firms had to do a continuous and persistent work regarding to internationalization and commercial promotion. Hence it resulted in other cluster's essential asset: an accumulated capital of know-how about acting in international markets. This asset is crucial to the footwear exports be able to achieve 90% of national production.

Flexibility, readiness and intensive commercial action aren't enough competitive factors, firms are sophisticating its offer through the investment in style, design and creation of collections and own brands. The reputation of Portugal as the origin of footwear quality and fashion is nowadays a precious asset to the cluster.

However, firms within the cluster are in different stages in this process of evolution on the value chain. Transforming one firm accustomed to be subcontracted by foreign buyers to mass-produce into a firm that produces and sells its own brands it's a hard and time consuming process which not all firms are capable. Some of these firms are still focused in undervalued products, others doesn't have the financial means needed to create and develop its own brand or to internationalize. Other problem that some firms have is the lack of management control and a weak organization and human resources without the necessary skills and competences. According to the European Commission, regarding to its analysis about problems that Portugal faces until 2020, this is a general problem in the Portuguese economy and the footwear industry is not an exception.

The cluster's strategy for the coming years must include the firm heterogeneity: there's no single business model suitable to all firms. But this heterogeneity has its virtues that enable firms to structure networks with different roles and responsibilities. This is a crucial mechanism to the knowledge share inside the cluster.

The footwear industry is constituted, almost exclusively, by small and medium enterprises for this reason, APICCAPS, the Portuguese Footwear, Components and Leather Goods Manufacturers' Association, has been the center of all collective strategies that can be assumed among all firms inside the industry. Strategies that stimulated network and cooperation to overcome the small dimension's inconvenient.

Over time, the daily hard work became into know-how and into a network of complicity between firms and support institutions. This is an unreachable, specific and unique net, hard to imitate and replicate. In other words, the greatest cluster's patrimony.

Footwear Cluster Risks

After the strengths and opportunities being addressed, it is essential to know and analyze its weaknesses and threats, as well. The strategy can't ignore the risks that the

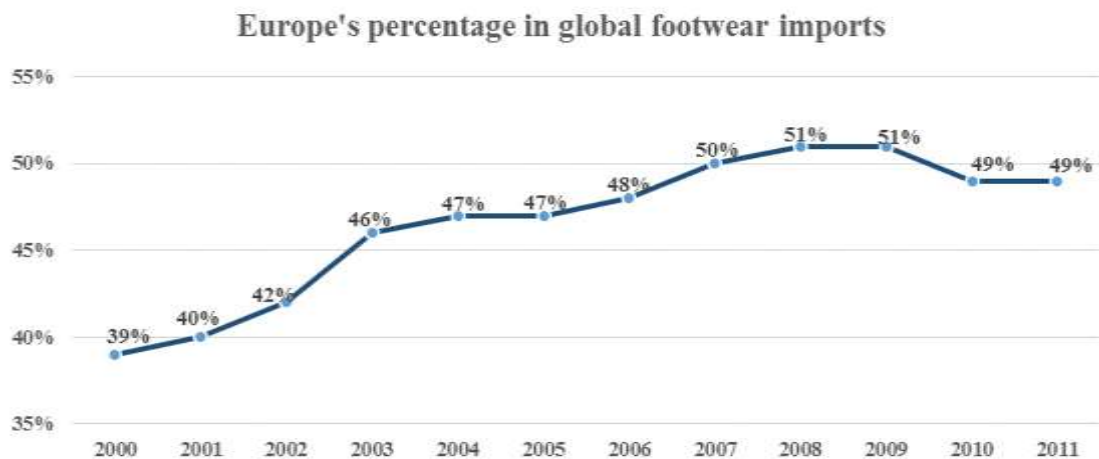
cluster is facing or could face in the near future. Over time, the Portuguese footwear industry's strategy aimed to rise progressively the range of products offered and the strategy for the next period want to follow the same pattern. Portugal exports expensive footwear but it want to export even more expensive footwear. Portugal has the second highest average price in the world and it aim to be the first one. To reach this goal the major markets of Portuguese footwear are those with high purchasing power.

European Union itself has 90% of Portuguese footwear exports and Europe has 50% of global footwear imports. Europe is the continent that pays the higher price for these imports, for this reason the geographic specialization of Portuguese exports is the consequence of its competitive model. (APICCAPS, 2014)

However, the macroeconomics perspectives to major developed countries, and particularly to European Union, don't allow to expect a great dynamism in footwear demand. These macroeconomic perspectives are expected to happen in other parts of Globe where exists a dynamic growth both in the economy and in the population, namely in Asia. (APICCAPS, 2014)

It is desirable for the Portuguese footwear to explore niches with high purchasing power outside its traditional markets. However, there is no dichotomy between old and new markets: Europe has an aspirational and "trend setter" role, mostly in market segments with higher value, where the Portuguese footwear wants to belong, influencing the consumers' choice around the world.

Figure 1 Europe's percentage in global footwear imports



Source: APICCAPS, World Footwear Yearbook 2012

The importance of Europe to the national footwear raises considerations with different nature: the flexibility and readiness arguments, that abled the Portuguese footwear to differentiate from other competitors, have an effectiveness decreasing with markets' distance. The achievement of market share in more distant countries brings up other competitive factors.

Moreover, the footwear industry faces risks linked to the supply of raw materials. The normal behaviour and viability in major firms is being dependent on the availability and the price of leather, this raw material represents 88% of the Portuguese footwear exports. These variables are influenced by others regions in the world where the footwear production is concentrated and also in others strong industries that consume the same raw materials. Other risk is the fact that the leather footwear has been losing percentage in international trade. There is a great possibility the need of some technological evolution regarding the footwear's raw materials resulting in alternatives with better performance and lower cost.

Finally, it is imperative don't forget that others competitors are not stopped. Italy, for instance, despite having a better international reputation than Portugal and being the first in the ranking regarding the footwear industry performance, is investing hardly in its national and international promotion. Asia have higher advantages regarding the lower costs of labour and keeps looking for solutions to reinforce it. Even Brazil is following internationalization strategies and value chain progression.

If the Portuguese footwear industry aims to be successful it must keep working hard, investing and evolving more than other international industries.

2.3.1. Surveys Procedure

To develop the empirical part of this dissertation it was necessary a careful contacts collection of Portuguese footwear firms to have a representative sample capable of giving trustful results, around 362 firms were selected. The first step was to send e-mails with a link to the survey (see appendix A) to the selected firms from my institutional university e-mail. We use Google Forms as platform to send the surveys to the respective firms and the responses were totally anonymous. This platform is very useful especially in terms of results outputs.

The second step was to call to some of the selected firms via telephone, around 145 were contacted, because there was no sufficient responds to the survey which made the results with poor consistence. The Portuguese footwear firms are a hard target to the surveys because the managers are always travelling to see and/ or participate in international footwear fairs and one of the selected firms was no longer producing in Portugal. Besides that there are always firms that refuse to fulfill the survey even if it is anonymous. We achieve 47 valid responses (at the end were 48 respondent firms, but the last firm replied too late and the analysis to the data of the survey was already done). These 47 responses were our baseline study to our research and result analysis.

3. Empirical Results and analysis

This chapter aims to provide the empirical results and analysis of data collected from firms of the Portuguese Footwear Cluster through the surveys.

3.1. Exploratory analysis – Characterization of firms

The sample includes 47 firms of the Portuguese footwear cluster.

3.1.1. Position in the firm

There are 19 different positions in the firm among the survey respondents, predominantly Supervisors (14.9%), Management and Commercial Directors (10.6% each) and Administrative and Managing Partners (8.5% each). The remaining positions at the firm have less importance.

Table 7 Position in the firm

Job	n	%
Supervisor	7	14.9
Management	5	10.6
Commercial Director	5	10.6
Administrative	4	8.5
Managing Partner	4	8.5
Commercial	3	6.4
Accountant	3	6.4
Financial Director	3	6.4
Human resources Director	2	4.3
Clerk	2	4.3
Head of services	1	2.1
Designer	1	2.1
Executive Director	1	2.1
Marketing Director	1	2.1
Quality Manager	1	2.1
Creative Director	1	2.1
Manager	1	2.1
Commercial Manager	1	2.1
Product Manager	1	2.1
Total	47	100.0

3.1.2. Firm Age

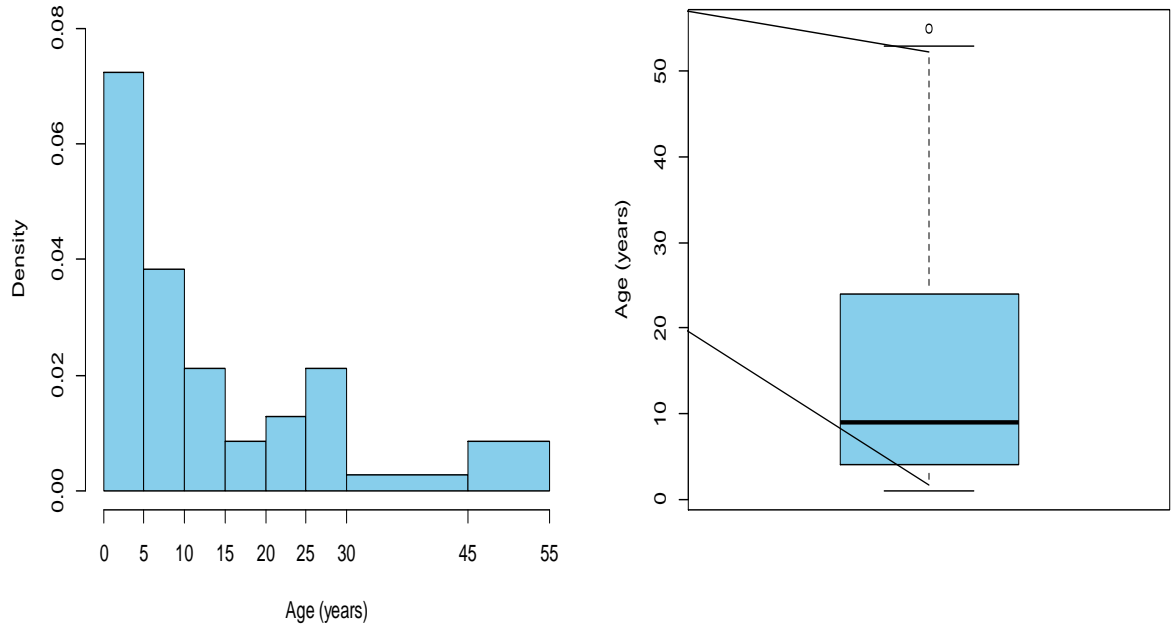
The distribution of the firm age (table and plot below) is strongly positively skewed (the Fisher asymmetry coefficient is 1.2), as it is clear in the histogram, which means that the low and moderate ages are predominant. In fact, a strong age concentration in the lower classes occurs, especially up to 5 years (with a minimum of 1 year), where a strong fall in the number of firms is observed, followed by a gradual decrease up to 30 years with very few older firms (the maximum is 55 years, identified in the box plot below).

Therefore, the average age is 15 years, higher than the median which is 9 years (i.e., half the firms are 9 years old or less), the 1st quartile is 4 years (i.e., a quarter of the firms are 4 years old or less) and the 3rd quartile is 24 years (i.e., three quarters of the firms are 24 years old or less), which shows that the firms' ages are concentrated in lower values. This concentration and the existence of some higher ages led to a high dispersion reflected in the coefficient of variation (98.7%).

Table 8 Firm age descriptive measures

Coefficients	
Minimum	1
Maximum	55
Average	15
1st Quartile	4
Median	9
3rd Quartile	24
Skewness Coefficient	1.2
Standard deviation	15.1
Coefficient of variation	98.7%

Figure 2 Firm age plot



3.1.3. Portuguese Classification of Economic Activities (CAE)

There are 13 different economic activities among the respondent firms, with a strong prevalence of CAE 15201 – footwear manufacturing (68.1%). The remaining economic activities have a small importance.

Table 9 Firm activities

CAE	n	%
15201	32	68.1
46422	3	6.4
15301	2	4.3
4444	1	2.1
14190	1	2.1
15120	1	2.1
16160	1	2.1
16295	1	2.1
17501	1	2.1
22192	1	2.1
25992	1	2.1
46160	1	2.1
64100	1	2.1
Total	47	100.0

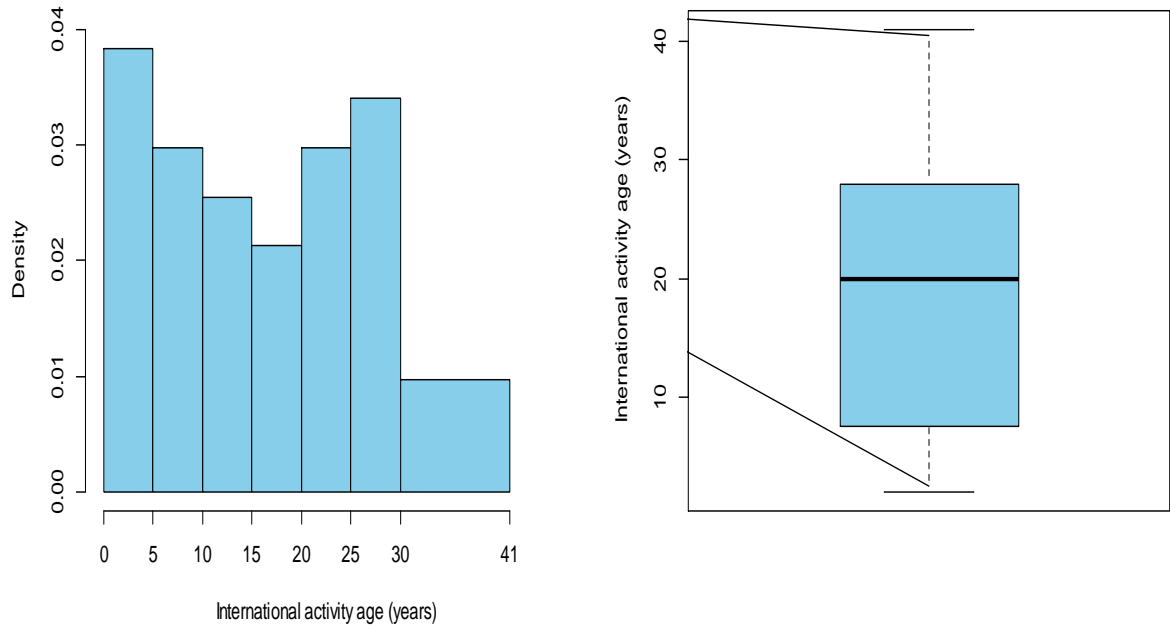
3.1.4. International activity age

The distribution of the firms' international activity age (table and plot below) shows the prevalence of ages up to 30 years, with a smaller importance of classes between 10 and 20 years, as it is clear in the histogram. Furthermore, only a few firms show an international activity older than 30 years, with a maximum of 41 years. Therefore, the average international activity age is 18.1 years, next to the median, which is 20 years, the 1st quartile is 7.5 years and the 3rd quartile is 28 years. Ages are concentrated in low and moderate values. This concentration and the existence of some higher ages led to a high dispersion reflected in the coefficient of variation (61.8%).

Table 10 International activity age descriptive measures

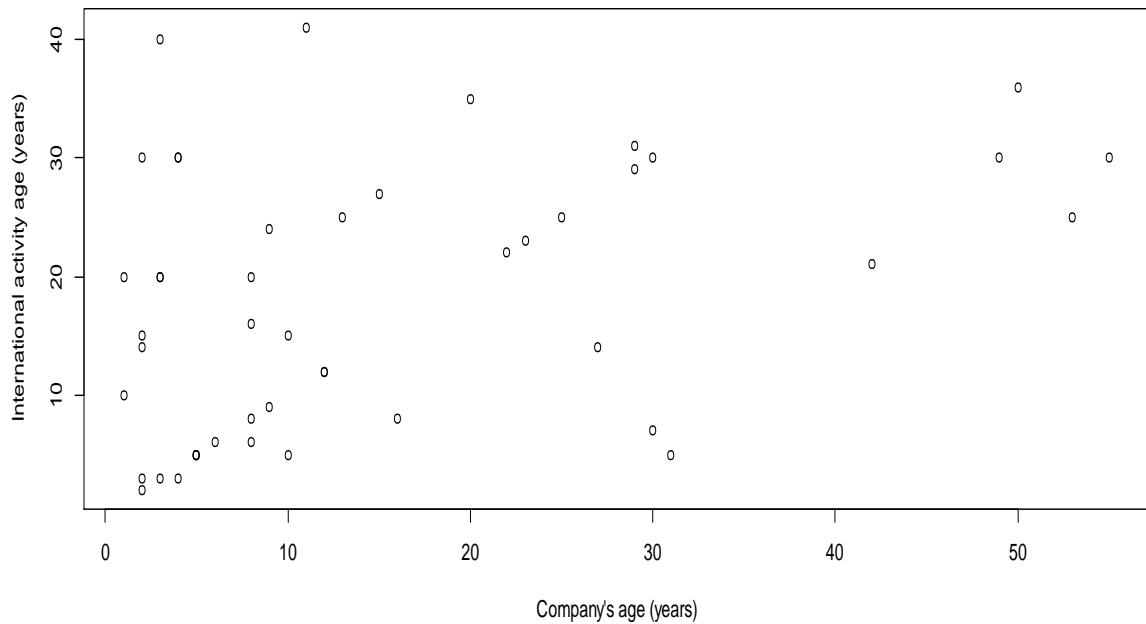
Coefficients	
Minimum	2
Maximum	41
Average	18.1
1st Quartile	7.5
Median	20
3rd Quartile	28
Skewness Coefficient	0.2
Standard deviation	11.2
Coefficient of variation	61.8%

Figure 3 International activity age plot



The following scatterplot shows the existence of a low positive correlation between the firms' age and their international activity age and consequently the correlation coefficient of Pearson is only 0.39. Since both ages do not have a normal distribution (the p-value of the Shapiro-Wilk test is approximately 0 and 0.015 respectively, rejecting the normality hypothesis), the Spearman coefficient of correlation is 0.37, with a p-value of 0.01. Therefore, we conclude that a significant positive correlation between the two variables exists (although slightly weak). Consequently, in general, when the firms' age increases (decreases), their international activity age also increases (decreases).

Figure 4 Scatterplot of a firm's age and its international activity age



3.1.5. Geographic location of the firm

There are 13 different locations among the respondent firms, predominantly Felgueiras (44.68%) and Pólo S. João da Madeira (36.17%). The remaining locations have few firms and are relatively close to both Polos.

Table 11 Location of firms

Location	n	%
Pólo Felgueiras	21	44.68
Pólo S. João da Madeira	17	36.17
Santa Maria da Feira	5	10.64
Oliveira de Azeméis	4	8.51
Total	47	100.0

3.1.6. Number of employees

The firms that have between 50 and 249 employees prevail with 48.9%, followed by firms that have between 10 and 49 employees (31.9%), less than 10 employees (14.9%) and those with at least 250 employees (4.3%). Therefore, the SMEs (small and medium enterprise) are predominant. However, there are still some micro firms (less than 10 employees) and a few large firms (250 or more employees).

Table 12 Number of employees

Number of Employees	n	%
< 10	7	14.9
10 – 49	15	31.9
50 – 249	23	48.9
≥ 250	2	4.3
Total	47	100.0

3.1.7. Turnover

The firms with a turnover between 2 million and 9 million euros prevail with 44.7%, followed by the firms with a turnover less than 2 million euros (36.2%), those between 10 million and 49 million euros (17%) and those with a turnover of at least 50 million euros (2.1%). Therefore, the firms with a lower turnover (up to 9 million euros) strongly prevail with 80.9%.

Note that a few firms with higher turnover also exist.

Table 13 Turnover

Turnover (10⁶ €)	n	%
< 2	17	36.2
2 – 9	21	44.7
10 – 49	8	17.0
≥ 50	1	2.1
Total	47	100.0

3.1.8. Number of export markets

The firms that export to between 2 and 5 markets prevail with 38.3%, followed by the firms that export to between 6 and 10 markets and those that export to more than 10 markets (27.7% each) and finally those that export to just one market (6.4%). A relevant fact is that all the respondent firms export to at least one market, there are no non-exporters.

Therefore, firms that export to between 2 and 5 markets prevail with 38.3% but the weight of those that export to at least 6 markets is higher, around 55.4%. So the majority exports to a moderate or high number of markets.

Table 14 Number of export markets

Number of markets	n	%
0	0	0.0
1	3	6.4
2 – 5	18	38.3
6 – 10	13	27.7
> 10	13	27.7
Total	47	100.0

3.1.9. Weight of exports in sales

The distribution of the weight of exports in sales is strongly negatively skewed (the Fisher asymmetry coefficient is -1.6), as it is clear in histogram and in boxplot below which it means that the higher weights prevail. Therefore, the number of firms with a weight of 70% or less is very small (these firms are very different from the majority) and there are only a few firms with a weight between 70% and 90%. There is also a considerable number with a weight between 90% and 95%, but the majority has a weight higher than 95%, of which a large proportion exports the whole production or almost all of it. The average weight is 81.3% but the median is 90% (which means that half the firms has a weight of 90% or less and that the other half has a weight of more than 90%, which is very high), the 1st quartile is 80% (a quarter of the firms has a weight of 80% or less) and the 3rd quartile is 99% (three quarters of the firms export 99% or less) which also means that a quarter of the firms has a weight between 99% and 100%, representing a very large number of firms, with a maximum of 100% (there are still 10,6% of firms exporting the whole of their sales).

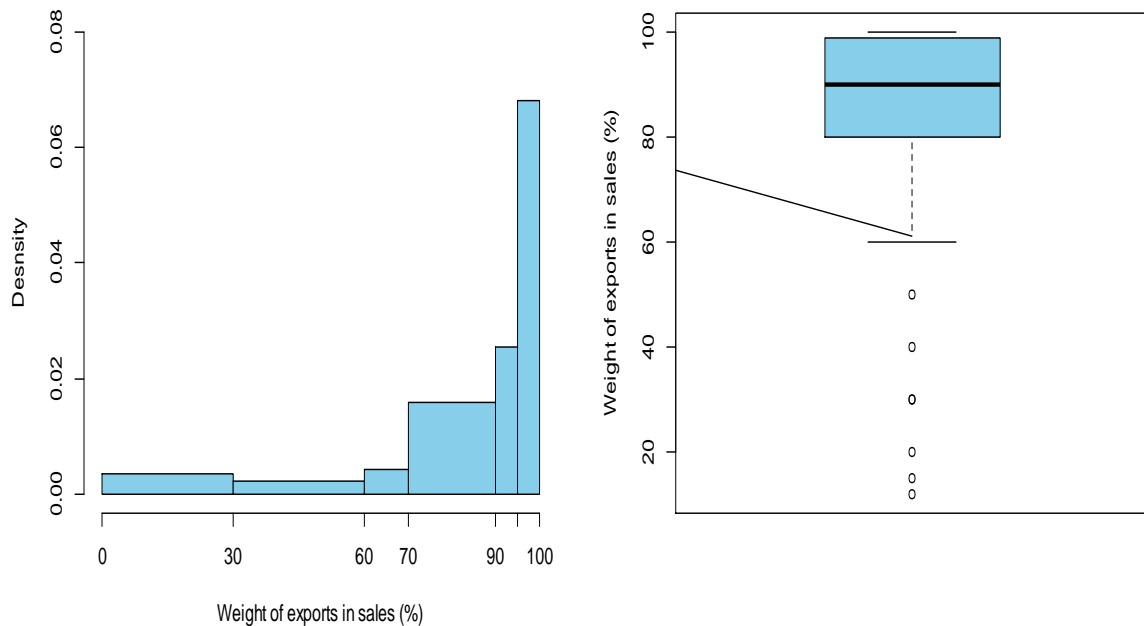
Therefore, the export intensity of these firms is extremely high. The weight of exports is concentrated in high or very high values but the existence of low values leads to a moderate dispersion as reflected by the coefficient of variation (30.6%).

Table 15 Weight of exports in sales descriptive measures

Coefficients	
Minimum	12
Maximum	100
Average	81.3
1st Quartile	80

Median	90
3rd Quartile	99
Skewness Coefficient	-1.6
Standard deviation	24.8
Coefficient of variation	30.6%

Figure 5 Graphic Representation of the weight of exports in sales plot



The relationships between the weight of exports in sales and on the one hand the age of firms and on the other hand the international activity age are also relevant. The Pearson correlation coefficients of the two pairs of variables are -0.045 and 0.003 respectively, very close to zero, indicating the absence of a linear association.

Similarly, the Spearman correlation coefficient is respectively 0.008 with a p-value of 0.96 and 0.089 with a p-value of 0.55, both non-significant. Therefore, it is not possible to say that there is a relationship between the weight of exports in sales and any of the other two variables. In short, firms' export intensity does not seem to be related with their age or with their international activity age.

3.1.10. Main export markets

There are 10 missing responses and therefore the table below only displays the results of 37 valid responses. Respondents listed 10 different markets, besides the European Union. The most important are France (24.3%), Germany (18.9%), the United Kingdom (16.2%), Spain and Netherlands (10.8% each). Very few firms export for the remaining markets.

Table 16 Main export markets

Market	n	%
France	9	24.3
Germany	7	18.9
United Kingdom	6	16.2
Spain	4	10.8
Netherlands	4	10.8
European Union	2	5.4
South Africa	1	2.7
Angola	1	2.7
Dubai	1	2.7
U.S.A	1	2.7
Italy	1	2.7
Total	37	100.0

3.1.11. Percentage of Human Resources with Higher Education

The distribution of the percentage of human resources with Higher Education is strongly positively skewed (the Fisher asymmetry coefficient is 2.7), as it is clear in the histogram and in the boxplot below, which means that the lower percentages prevail. Consequently, there is a strong concentration of percentages in the lower classes and, in fact, the class of 1% or less is the most important, being followed by successive falls, with a minimum of zero.

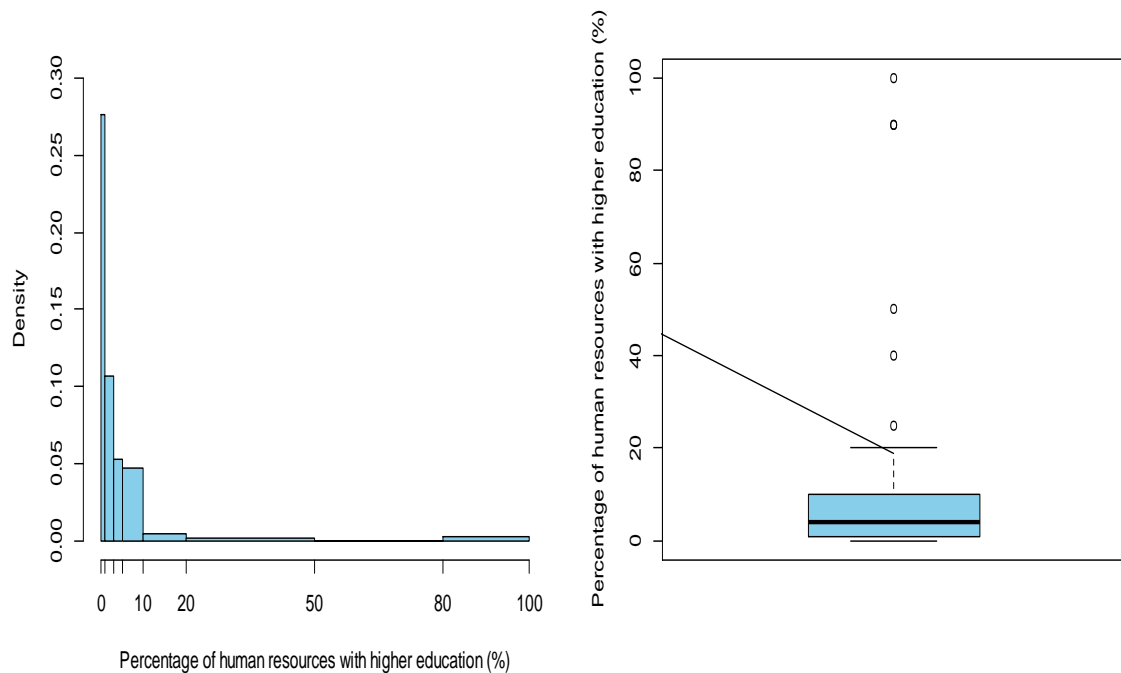
There are very few firms with percentages higher than 10% and the number of firms with percentages higher than 50% is extremely low, with a maximum of 100%. Therefore, the average percentage is only 12.6%, higher than the median of 4% (i.e., half the firms has a percentage of 4% or less), the 1st quartile is 1% and the 3rd quartile is only 10%, which means that the percentages are concentrated in extremely low values. This concentration and the existence of some high percentages lead to a very

strong dispersion, reflected by the coefficient of variation (187%). In short, most firms have very few human resources with Higher Education available.

Table 17 Percentage of human resources with higher education descriptive measures

Coefficients	
Minimum	0
Maximum	100
Average	12.6
1st Quartile	1
Median	4
3rd Quartile	10
Skewness Coefficient	2.7
Standard deviation	23.5
Coefficient of variation	187%

Figure 6 Percentage of human resources with higher education plot



3.1.12. Attendance at International Fairs

The majority of firms (53.2%) has attended-international fairs.

3.1.13. Own Brand

The majority of firms (70.2%) has their own brand. The distribution of their own-brand sales percentage shows a strong concentration in low percentages, up to 10%, or in very high percentages (100%). The percentages between 10% and 80% are very scattered, with few firms for such a wide range as shown by the histogram.

Note also that there are no percentages between 80% and 100% which implies that the last bar on the right in the histogram includes firms with 100% only.

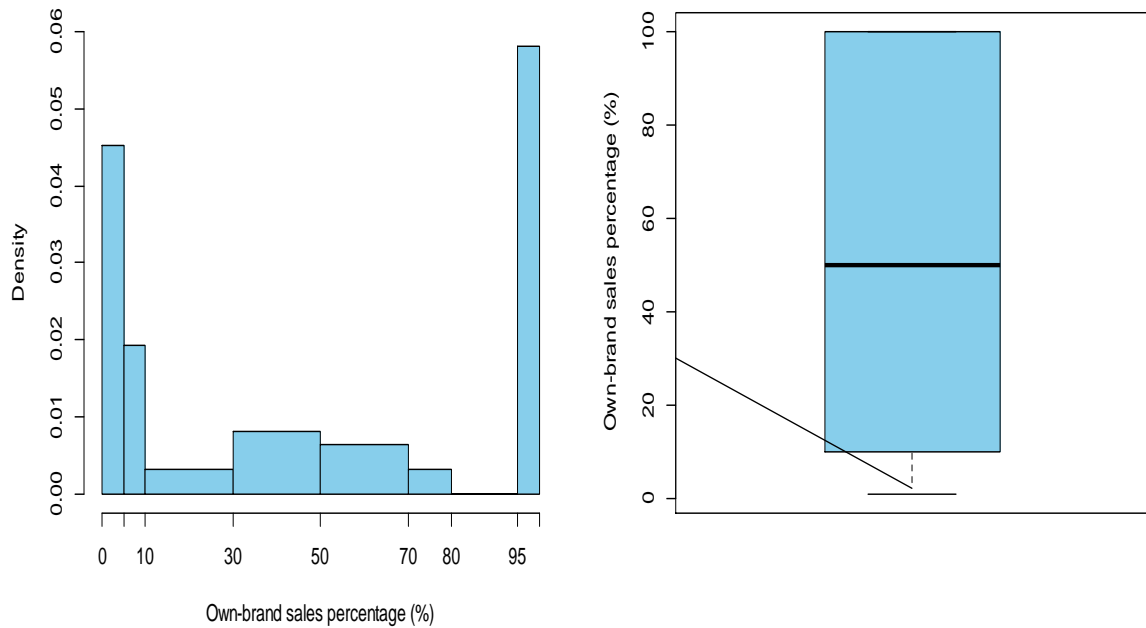
Therefore, the average percentage is 50.7%, but it is important to stress that this value has very little meaning because of the concentration in the lower or in the higher percentages mentioned above. The median is 50%, almost coincident with the average, but it also has very little meaning. The 1st quartile is only 10% and the 3rd quartile is 100%, which shows the existence of an important number of firms with a percentage of 100%, i.e., firms who sell their own brand exclusively.

The concentration of percentages either in high values or in low values, leads to a high dispersion reflected by the coefficient of variation (77.7%).

Table 18 Own-brand sales percentage descriptive measures

Coefficients	
Minimum	1
Maximum	100
Average	50.7
1st Quartile	10
Median	50
3rd Quartile	100
Skewness Coefficient	0.06
Standard deviation	39.4
Coefficient of variation	77.7%

Figure 7 Own-brand sales percentage plot



3.1.14. Outsourcing

Only a small minority of firms (21.3%) is outsourced. The percentage of their sales in outsourcing is 1%, 20% (2 firms), 29%, 45%, 80% and 100% (3 firms did not respond). Therefore, the average and the standard deviation are respectively 43.4% and 34.1% (note that dispersion is very high because of the large differences between percentages).

3.1.15. Use of outsourcing

The majority of firms (74.5%) uses outsourcing.

3.1.16. Investment in Research and Development (R&D)

Almost half of the firms invest in R&D (46.8%).

3.1.17. Investment in Marketing

More than half of the firms invest in Marketing (51.1%).

3.1.18. Investment in Design

The majority of firms (66%) invests in Design.

3.1.19. Geographically near entities with which firms keep business relationships

Since the same firm flag more than one entity, the table below displays the number of entities identified instead of the number of firms.

The most important entities are component manufacturers (12%), raw material suppliers (10.4%), Banks (10.1%), APICCAPS (8.2%), footwear manufacturers (7.9%), leather accessory manufacturers and the Footwear Technological Centre (7.4% each), but several other entities have a considerable importance. Although there is a large number of entity combinations, the majority simultaneously indicates footwear manufacturers, component manufacturers, leather accessory manufacturers, raw material suppliers, equipment suppliers, indicating all or some of these entities. Additionally, other entities are also simultaneously indicated, such as export agents, the Footwear's Industry Professional Training Centre, the Footwear Technological Centre, an international logistic firm, a Bank, institutions such as APICCAPS, IAPMEI and AICEP.

Table 19 Entities with which firms keep business relationships

Entity	n	%
Component manufacturers	44	12.0
Raw material suppliers	38	10.4
Banks	37	10.1
APICCAPS	30	8.2
Footwear manufacturers	29	7.9
Leather accessory manufacturers	27	7.4
Footwear Technological Centre	27	7.4
Equipment suppliers	23	6.3
International logistic firm	23	6.3
Export Agents	23	6.3
Footwear's Industry Professional Training Centre	21	5.7
IAPMEI	16	4.4
AICEP	11	3.0
Design/ fashion trend firm	7	1.9
Other Professional Schools	5	1.4
International marketing firm	3	0.8
Other	2	0.5
Total	366	100.0

The Portuguese Footwear Sector fulfills the essential condition of geographical concentration for this reason it is considered a Cluster. According to APICCAPS (APICCAPS, 2013) the footwear production in Portugal has a strong concentration in two regions, Felgueiras and São João da Madeira and they are important to the regional economic activity and this evidence is clear among the sample of this survey composed by 47 firms.

Summing up the exploratory analysis of the sample and the characterization of the business of the respondents' firms of the footwear sector:

The majority of these firms are relatively young, their average of age is 15 years, and 50% of them have 9 years or less. All firms have international experience in average of 18.1 years, a higher value than the age average. This means that older firms also have longer international experiences and that this is a prevalent trait.

Most firms in our sample are micro, small-medium sized (SMEs) according to their turnover or employee numbers. The majority of these firms are small with a turnover between 2 and 9 million euros (44.7%) and one third of them is micro (turnover smaller than 2 million euros). In terms of number of employees 48.9% of firms have between 50 and 249 persons (average size) and 47% have less than 50 persons (small) which means they are SMEs. In terms of qualifications the percentage of employees with Higher Education is very low, the majority of firms has only 1% of human resources with Higher Education.

All the respondents' firms export to foreign markets, most of them to more than 6 different destinations. Exports are 81.3% of sales on average, yet, half of the respondents' firms exports more than 90% of their sales and a quarter of them more than 99%. Their main export markets are France (29.3%), Germany (18.9%), United Kingdom (16.2%) and Spain and Netherlands (10.8% each). These results are in line with APICCAPS' report: "The geographical concentration of Portuguese footwear exports is also clear at the level of individual countries of destination: although that percentage has decreased in 2013, five markets (France, Germany, Spain, The Netherlands and the United Kingdom) absorb almost three quarters of exports (73% in value, 74% in quantity)" (APICCAPS, 2014;pp.34). This similarity between the

footwear cluster statistics and the results of this survey reveals that these 47 firms are a representative sample with trustful and very important results to the sector/cluster.

Additionally, more than half of these firms have regular attendance at International Fairs (53.2%). Concerning to Brand, Investment in Design, Marketing and Research and Development: 70.2% of these firms have own brand (average sales of 50.7% that result from concentration on very low and very high percentages); 46.8% invest in R&D; 51.1% invest in Marketing and 66% invest in Design. Once again, these results are in line with the Strategic Plan Report of APICCAPS (“Footure2020”) already mentioned in chapter 2.3. of this dissertation: “Portuguese firms continued to invest and strengthen their capabilities in innovation, design and fashion, and to invest in international marketing through its presence in international fairs. Some of these firms went forward and created its own brands. At the same time, the Portuguese footwear has changed radically its image, investing on a very bold look and slogans as “designed by the future” and “the sexiest industry in Europe. (APICCAPS, 2013)”

Relating to Outsourcing: 21.3% is outsourced and 74.5% uses outsourcing.

The entities that are geographically near with which these firms keep business relationships are mainly: component manufacturers (12%), raw material suppliers (10.4%), banks (10.1%), APICCAPS (8.2%) and footwear manufacturers (7.9%).

All these results confirm that firms of the Portuguese footwear sector have an intensive international activity, exporting a very high percentage of their sales. And more importantly is the fact that the tendency of these sector is to grow and become even more international, according to APICCAPS (2013): “APICCAPS continues to work with its members on a strategy to diversify away the destination markets, as one of the goals of the Portuguese footwear industry is to deepen the presence in new markets, so that extra EU exports represent 20% of the total sales abroad by 2020.”

3.2. Opinion on the Cluster

3.2.1. Exploratory analysis

The frequencies of the different responses to the scale of the firms' opinion on the Portuguese footwear cluster are displayed in the next table:

- “A partilha do conhecimento dentro do Cluster incentiva a internacionalização das suas empresas” (Knowledge share inside the cluster has a positive impact on the internationalization process of its firms) – “Agree” represents the majority of the responses (63.8%), followed by “Neither agree nor disagree” (25.5%), “Strongly Agree” (8.5%) and “Disagree” (2.1%), not existing any “Strongly Disagree” responses. Therefore, the level of agreement is high (note that “Agree” and “Strongly Agree” jointly represent 72.3% of the firms).
- “A partilha de recursos importantes e raros entre empresas do mesmo cluster facilita o processo de internacionalização das mesmas” (The share of important and rare resources among firms within the same cluster can ease their internationalization process) – “Agree” represents the majority of the responses (66%), followed by “Neither agree nor disagree” (21.3%), “Strongly Agree” (8.5%) and “Disagree” (4.3%), not existing any “Strongly Disagree” response. Therefore, the level of agreement is high (note that “Agree” and “Strongly Agree” jointly represent 74.5% of the firms).
- “As Relações de Cooperação e Networking dentro do Cluster estão positivamente associadas ao processo de internacionalização das suas empresas” (Cluster's cooperative relations and networking are positively associated with the internationalization process of its firms) – “Agree” represents the majority of the responses (53.2%), followed by “Neither agree nor disagree” (29.8%) and “Strongly Agree” and “Disagree” (8.5% each), not existing any “Strongly Disagree” response. Therefore, the level of agreement is low (note that “Agree” and “Strongly Agree” jointly represent 61.7% of the firms).
- “A experiência internacional das empresas dentro do cluster aumenta o interesse/vontade das menos experientes em iniciar atividades internacionais” (The internationalization experience of firms in the cluster enhances the willingness to internationalize of other firms within the cluster) – “Agree” represents the majority of

responses (63.8%), followed by “Neither agree nor disagree” (19.1%), “Strongly Agree” (14.9%) and “Disagree” (2.1%), not existing any with “Strongly Disagree” response. Therefore, the level of agreement is high (note that “Agree” and “Strongly Agree” jointly represent 78.7% of the firms).

- “A diversidade das características das empresas dentro do Cluster faz com que cada uma delas tenha diferentes capacidades de internacionalização” (Heterogeneity of firms is relevant to understand why firms within a cluster have different levels of Internationalization) – “Agree” represents the majority of the responses (61.7%), followed by “Neither agree nor disagree” (21.3%), “Strongly Agree” (14.9%) and “Disagree” (2.1%), not existing any “Strongly Disagree” response. Therefore, the level of agreement is high (note that “Agree” and “Strongly Agree” jointly represent 76.6% of the firms).
- “A presença de Empresas de Referência dentro do Cluster influencia positivamente a internacionalização de outras empresas pertencentes ao Cluster” (The presence of Leader firms in the cluster influence positively the internationalization of other firms in the cluster) – “Agree” represents the majority of the responses (55.3%), followed by “Neither agree nor disagree” (21.3%), “Strongly Agree” (17%) and “Disagree” (6.4%), not existing any with “Strongly Disagree” response. Therefore, the level of agreement is high (note that “Agree” and “Strngly Agree” jointly represent 72.3% of the firms).
- “A intensidade competitiva entre as empresas do Cluster influencia positivamente o processo de internacionalização das mesmas” (The degree of domestic rivalry among firms inside the cluster influences their internationalization process) – “Agree” represents the majority of the responses (63.8%), followed by “Neither agree nor disagree” (23.4%), “Strongly Agree” (8.5%) and “Disagree” (4.3%), not existing any with “Strongly Disagree” response. Therefore, the level of agreement is high (note that “Agree” and “Strongly Agree” jointly represent 72.3% of the firms).
- “A presença de Multinacionais estrangeiras dentro do Cluster tem impacto positivo na internacionalização das restantes empresas” (The presence of foreign MNCs inside the cluster has a positive impact on the internationalization of its firms) – “Neither agree nor disagree” represents the majority of the responses (38.3%), followed by “Agree” (29.8%), “Disagree” (27.7%) and “Strongly Agree” and “Strongly Disagree” (2.1% each). Therefore, the level of agreement is low (note that “Agree” and “Strongly agree”

jointly represent 31.9% of the firms only and there exists a considerable percentage of “Neither agree nor disagree” and “Disagree” responses).

- “A boa reputação internacional do Cluster funciona como incentivo para a internacionalização das suas empresas” (A cluster’s good reputation facilitates the internationalization process of its firms) – “Agree” represents the majority of the responses (53.2%), followed by “Strongly Agree” (27.7%), “Neither agree nor disagree” (17%) and “Disagree” (2.1%), not existing any “Strongly Disagree” response. Therefore, the level of agreement is high (note that “Agree” and “Strongly Agree” jointly represent 80.9% of the firms).
- “A boa reputação internacional do Cluster facilita o processo de internacionalização das suas empresas” (A cluster’s good reputation facilitates the internationalization process of its firms) – “Agree” represents the majority of the responses (51.1%), followed by “Strongly Agree” (29.8%), “Neither agree nor disagree” (17%) and “Disagree” (2.1%), not existing any with “Strongly Disagree” response. Therefore, the level of agreement is high (note that “Agree” and “Strongly Agree” jointly represent 80.9% of the firms).
- “A Capacidade de inovação do Cluster tem um impacto positivo na internacionalização das suas empresas” (The cluster’s innovative capacity has a positive impact on its firms and facilitates their internationalization) – “Agree” represents the majority of the responses (55.3%), followed by “Strongly agree” (23.4%), “Neither agree nor disagree” (19.1%) and “Disagree” (2.1%), not existing any with “Strongly Disagree” response. Therefore, the level of agreement is high (note that “Agree” and “Strongly Agree” jointly represent 78.7% of the firms).

Table 20 Questions "Opinion on the Cluster"

Question	“Agree”	“Strongly Agree”	Level of Agreement
“A partilha do conhecimento dentro do Cluster incentiva a internacionalização das suas empresas”	63.8%	8.5%	72.3% (High)
“A partilha de recursos importantes e raros entre empresas do mesmo cluster facilita o processo de internacionalização das mesmas”	66%	8.5%	74.5% (High)
“As Relações de Cooperação e Networking dentro do Cluster estão positivamente associadas ao processo de internacionalização das suas empresas”	53.2%	8.5%	61.7% (High)
“A experiência internacional das empresas dentro do cluster aumenta o interesse/ vontade das menos experientes em iniciar atividades internacionais”	63.8%	14.9%	78.7% (High)

“A diversidade das características das empresas dentro do Cluster faz com que cada uma delas tenha diferentes capacidades de internacionalização”	61.7%	14.9%	76.6% (High)
“A presença de Empresas de Referência dentro do Cluster influencia positivamente a internacionalização de outras empresas pertencentes ao Cluster”	55.3%	17%	72.3% (High)
“A intensidade competitiva entre as empresas do Cluster influencia positivamente o processo de internacionalização das mesmas”	63.8%	8.5%	72.3% (High)
“A presença de Multinacionais estrangeiras dentro do Cluster tem impacto positivo na internacionalização das restantes empresas”	29.8%	2.1%	31.9% (Low)
“A boa reputação internacional do Cluster <u>funciona como incentivo</u> para a internacionalização das suas empresas”	53.2%	27.7%	80.9% (Extremely High)
“A boa reputação internacional do Cluster <u>facilita</u> o processo de internacionalização das suas empresas”	51.1%	29.8%	80.9% (Extremely High)
“A Capacidade de inovação do Cluster tem um impacto positivo na internacionalização das suas empresas”	55.3%	23.4%	78.7% (Very High)

Table 21 Firms’ opinion on Cluster

Question	Frequency									
	Strongly disagree		Disagree		Neither agree nor disagree		Agree		Strongly Agree	
	n	%	n	%	n	%	n	%	n	%
1	0	0.0	1	2.1	12	25.5	30	63.8	4	8.5
2	0	0.0	2	4.3	10	21.3	31	66.0	4	8.5
3	0	0.0	4	8.5	14	29.8	25	53.2	4	8.5
4	0	0.0	1	2.1	9	19.1	30	63.8	7	14.9
5	0	0.0	1	2.1	10	21.3	29	61.7	7	14.9
6	0	0.0	3	6.4	10	21.3	26	55.3	8	17.0
7	0	0.0	2	4.3	11	23.4	30	63.8	4	8.5
8	1	2.1	13	27.7	18	38.3	14	29.8	1	2.1
9	0	0.0	1	2.1	8	17.0	25	53.2	13	27.7
10	0	0.0	1	2.1	8	17.0	24	51.1	14	29.8
11	0	0.0	1	2.1	9	19.1	26	55.3	11	23.4

3.2.2. Scale conceptual structure

A factor analysis of this questionnaire was run in order to identify the factors underlying the firms' responses and to validate the questionnaire scale. (See Appendix B)

The results of the factorial analysis forced to 5 factors⁷ with varimax rotation and Kaiser normalization are displayed in the next table where the factor loadings are shown with the largest loading of each question in bold (note that the questions are ordered according to the factor where they saturate and not according to the order they appear in the questionnaire). Other factor solutions were tried, especially that with 4 factors, but the solution with 5 factors proved to be the most appropriate which means that 5 factors are enough to describe the structure underlying the data (latent structure).

Most of the factor loadings are high or very high and only two are acceptable which leads again to the conclusion that the quality of this factor solution is good. The table also displays the communalities, i.e., the proportion of the variance of each question explained by the 5 extracted factors together. That proportion is much larger than 50% for every question (larger than 0.75 in fact) and is high for some questions and very high for others implying again that the results of this factor analysis are reliable.

Table 22 Scale of the opinion on the Cluster - Factor structure

Question	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Com.
1	0.818	0.038	0.336	0.053	-0.106	0.797
2	0.840	0.317	-0.044	0.022	0.109	0.821
3	0.773	0.411	-0.243	-0.059	0.067	0.834
4	0.609	0.009	0.343	0.457	-0.293	0.783
9	0.112	0.849	0.265	0.122	-0.039	0.819
10	0.352	0.767	0.269	-0.020	-0.087	0.793
11	0.248	0.762	-0.176	0.333	0.093	0.792
6	0.008	0.475	0.589	0.238	0.355	0.755
7	0.085	0.119	0.883	-0.012	0.120	0.816
5	0.014	0.218	0.029	0.928	0.045	0.911
8	-0.011	-0.031	0.175	0.011	0.949	0.932

⁷ See Technical Details in Appendix B

The first factor shows high loadings of questions 1, 2, 3 and 4 and consequently this factor may be called the dimension of “Networking and knowledge and resources sharing among firms”. Question 1 is related to the influence that the share of knowledge among firms have in their internationalization process, question 2 is related to the influence that the share of important and rare resources among firms have in their internationalization process and question 3 approaches networking and cooperation among firms has an incentive for them in their international activities, so these three questions are interlinked by the nature of networking and knowledge sharing among firms. Questions 1, 2 and 3 belong to Hypothesis 1 (*H1: Cluster Governance has a positive relationship with the internationalization process of its firms*): question 1 is H1a, question 2 is H1b and question 3 is H1c, based on the study by Dubé et al., (2015). Moreover, since the 3 questions have high levels of agreement, H1a, H1b and H1c are confirmed.

Question 4 is within the same factor and despite the question may looks different in its approach comparing to the other 3 questions, make sense why they are together. Question 4 is related to the international experience of others firms inside the cluster and how this experience influence other firms to internationalize, this type of question is interconnected with the other 3 questions by its nature of sharing, in this case the international experience sharing among firms. Question 4 is Hypothesis 2 (*H2: The internationalization experience of firms in the cluster enhances the willingness to internationalize of others firms within the cluster*), based on the study by Mariotti et al. (2008), and since this question has high level of agreement, H2 is confirmed.

The second factor shows high loadings of questions 9, 10 and 11 and consequently this factor may be called the dimension of “Cluster’s International Reputation”. Question 9 and 10 are related to the influence that cluster’s good reputation have in the internationalization process of its firms and both are related to Hypothesis 6 (*H6: A cluster’s good reputation facilitates the internationalization process of its firms*), based on studies by Zyglidopoulos et al. (2011) and Zen et al. (2011). Question 9 refers to how cluster works as an incentive to the internationalization and question 10 refers to how it facilitates the all internationalization process of firms. Question 11 despite having a different aim, it is related with the innovative capacity of the cluster and the

impact on the internationalization of firms, so this question leads equally to the importance of the reputation of the cluster but in this case for innovation. This question is Hypothesis 7 (*H7: Cluster's innovative capacity has a positive impact on its firms and facilitates the internationalization of its firms*), based on the study by Mariotti et al. (2008). These 3 questions have extremely and very high level of agreement which confirms H6 and H7.

The third factor shows high loadings of questions 6 and 7 and consequently this factor may be called the dimension of "The Leader firms' effect and competitiveness". Question 6 refers to the presence of leader firms and how it influence other firms to internationalize through imitation and/or know-how that the Leader firm can share as well the international experience, and is related with Hypothesis 3 (*H3: The presence of Leader firms in the cluster influence positively the internationalization of others firms in the cluster*). Question 7 refers to the impact that competitiveness among firms has on its internationalization process and is related with Hypothesis 4 (*H4: The Degree of domestic rivalry between firms inside the cluster influences their internationalization process*).

It is interesting to observe that H3 and H4 are based on the study by Mariotti et al. (2008) and both are considered Structural Determinants to the author as analyzed in chapter 1.4. Firms who want to have the necessary capacity to compete must internationalize to grow and be capable to overcome other firms. Both questions have high levels of agreement which means that H3 and H4 are confirmed.

The fourth factor shows high loadings of question 5 only which means that this question is different from the rest due to its approach, this factor may be called the dimension of "Heterogeneity of firms". Question 5 refers to the heterogeneity among firms and the impact that the diversity of firms have on its level of internationalization. The positive impact of belong to a cluster and having the same access to know how, knowledge and resources doesn't mean that all firms will internationalize at the same level due to its heterogeneity. Question 5 refers to Hypothesis 8 (*H8: Heterogeneity of firms is relevant to understand why firms within a cluster have different levels of Internationalization*)

based on the study by Giovannettia et al. (2013). The level of agreement to the question 5, a very high level of agreement, confirms H8.

The fifth factor shows high loadings of question 8 only which means that this question is also different from the rest. In fact, recall that the pattern of the responses to this question was distinct from all the others, with the lowest agreement of all and with “Neither agree nor disagree” being the most frequent response. Question 8 refers to the impact of the presence of foreign multinationals inside the cluster on the internationalization process of other firms. These question refers to Hypothesis 5 (*H5: The presence of foreign MNCs inside the cluster has a positive impact on the internationalization of its firms*) based on the study by Mariotti et al. (2008).

Through the questionnaire it is possible to conclude that the presence of Multinationals inside the cluster is not an important factor to the internationalization of other firms, so H5 is not confirmed. The explanation for this is the nature of the internationalization of these firms. The Portuguese footwear sector is an international sector but its foreign activities and networking is through export and not through Foreign Direct Investment (FDI), that’s why MNC’s don’t have an impact in their internationalization process.

The quality of the factor model was assessed and the conclusion is that both the total questionnaire and the factors show a good reliability and internal consistency (see appendix C).

3.2.3. Cluster analysis

A hierarchical cluster analysis was also run in order to identify homogeneous clusters (groups) integrating firms with similar features and a common profile concerning their opinions on the Footwear cluster.

Several distance measures and aggregation indices were tried and the inertia and the R^2 coefficient were computed for different numbers of clusters. The comparison of the solutions found led to the choice of Ward linkage with the squared euclidean distance. Clusters were based on the 5 factors previously obtained in the factorial analysis and on the (nonstandardized) factor scores (standardizing the scores would reduce the differences among variables and would assume the same weight for each one).

It was necessary to decide on the number of clusters first. Such decision was based on two elements: the inertia (variance) decomposition in within-cluster and between-cluster inertia computed from an analysis of variance with the resulting clusters which also allows the computation of the inertia proportion explained by each considered partition (R^2 coefficient) and on the analysis of the dendrogram shown below where the different partitions and their meaning were assessed. Therefore, the next table and plot display the inertia proportions mentioned above, suggesting a solution with 9 clusters because this is where both the decrease of the within-cluster inertia or the increase of the between-cluster inertia start slowing down. The proportions are 32.9% and 67.1% respectively which is acceptable and the dendrogram also suggests the same solution, even though 10 clusters would also be possible. Therefore, the solution with 9 clusters was selected.

Table 23 Scale of the opinion on the Cluster - Within-cluster and between-cluster inertia

Number of clusters	Within-cluster	Between-cluster
1	100.0	0.0
2	82.4	17.6
3	70.0	30.0
4	60.6	39.4
5	53.6	46.4
6	47.3	52.7
7	41.9	58.1
8	36.8	63.2
9	32.9	67.1
10	29.6	70.4

Figure 8 Scale of the opinion on the Cluster - Plot of within-cluster and between-cluster inertia

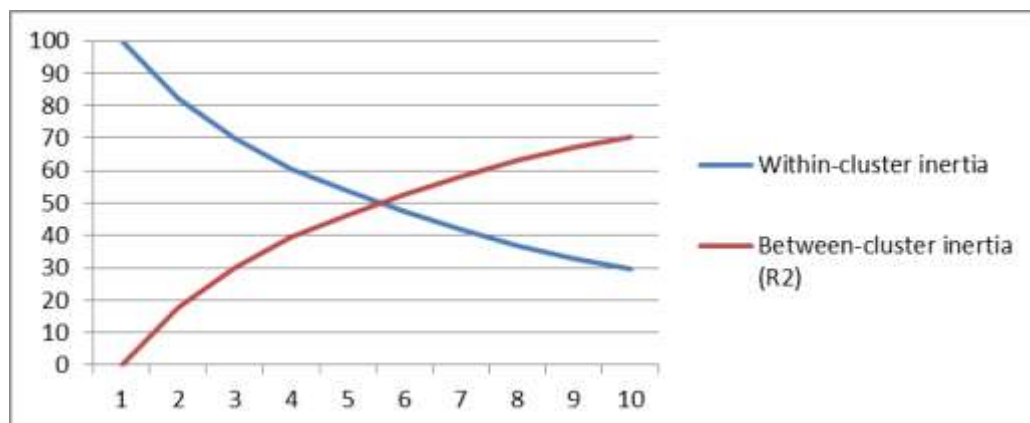
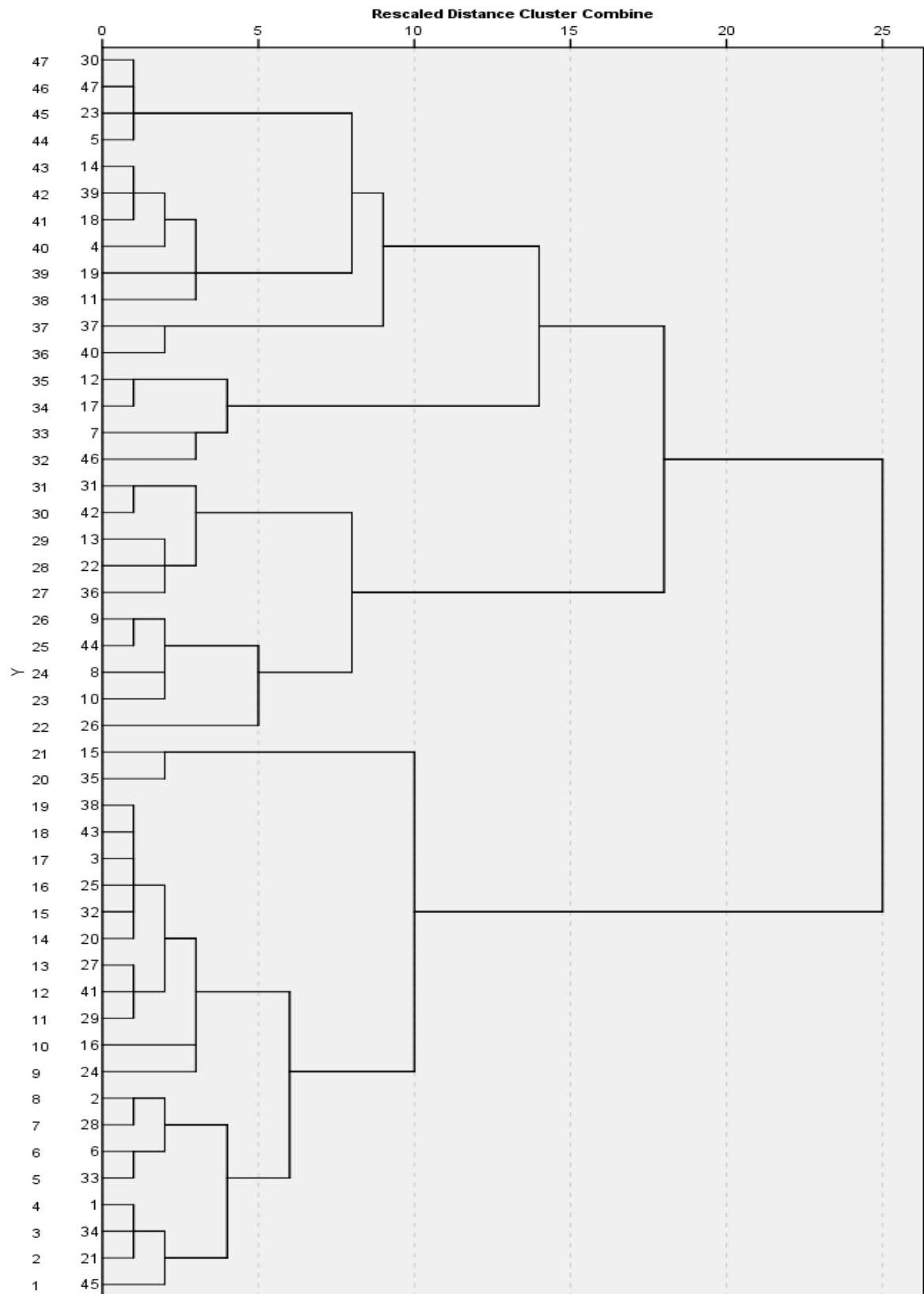


Figure 9 Scale of the opinion on the Cluster - Dendrogram – Ward linkage/Squared euclidean distance



Cluster membership is displayed in the next table.

Table 24 Scale of the opinion on the Cluster - Cluster membership

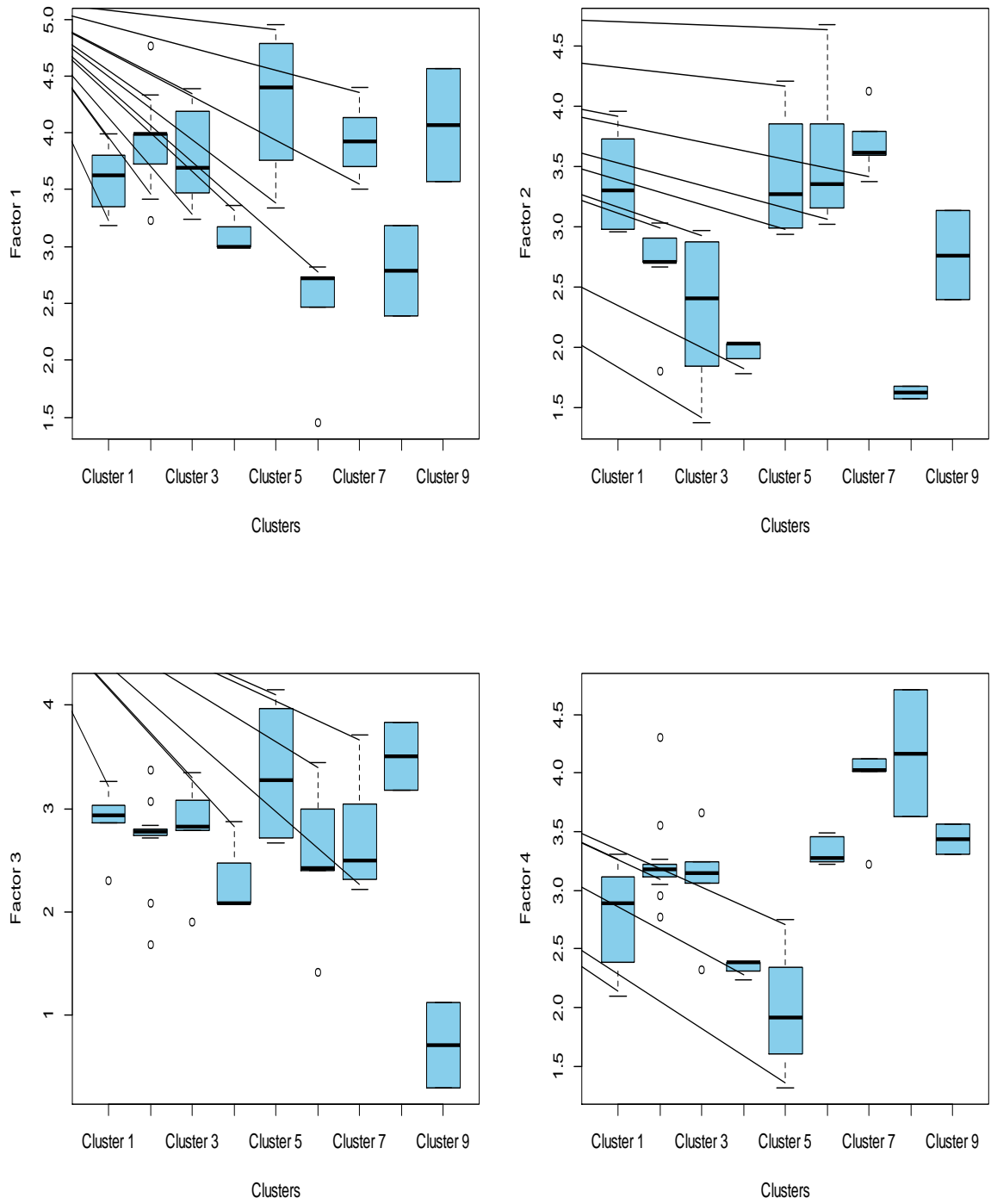
Firm	Cluster	Firm	Cluster	Firm	Cluster	Firm	Cluster
1	1	13	7	25	2	37	9
2	1	14	3	26	6	38	2
3	2	15	8	27	2	39	3
4	3	16	2	28	1	40	9
5	4	17	5	29	2	41	2
6	1	18	3	30	4	42	7
7	5	19	3	31	7	43	2
8	6	20	2	32	2	44	6
9	6	21	1	33	1	45	1
10	6	22	7	34	1	46	5
11	3	23	4	35	8	47	4
12	5	24	2	36	7		

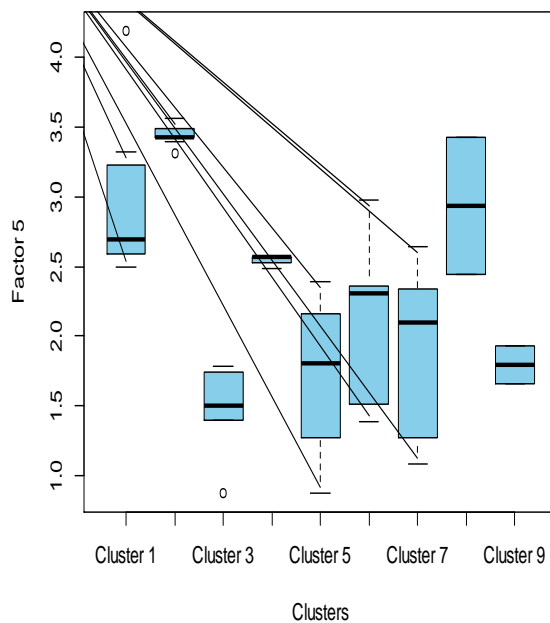
Cluster interpretation was done next based on the meaning of the factors resulting from the factorial analysis previously run. The mean factor score and standard deviation of each cluster are displayed in the next table and the boxplots show the score distribution for each cluster.

Table 25 Scale of the opinion on the Cluster - Cluster mean and standard deviation

Cluster		Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
1	Mean	3.6	3.4	2.9	2.8	3.0
	Standard deviation	0.3	0.4	0.3	0.4	0.6
2	Mean	3.9	2.7	2.7	3.3	3.4
	Standard deviation	0.4	0.3	0.5	0.4	0.1
3	Mean	3.8	2.3	2.8	3.1	1.5
	Standard deviation	0.4	0.6	0.5	0.4	0.3
4	Mean	3.1	2.0	2.3	2.4	2.5
	Standard deviation	0.2	0.1	0.4	0.1	0.0
5	Mean	4.3	3.4	3.3	2.0	1.7
	Standard deviation	0.7	0.6	0.7	0.6	0.6
6	Mean	2.4	3.6	2.5	3.3	2.1
	Standard deviation	0.6	0.7	0.8	0.1	0.7
7	Mean	3.9	3.7	2.8	3.9	1.9
	Standard deviation	0.4	0.3	0.6	0.4	0.7
8	Mean	2.8	1.6	3.5	4.2	2.9
	Standard deviation	0.6	0.1	0.5	0.8	0.7
9	Mean	4.1	2.8	0.7	3.4	1.8
	Standard deviation	0.7	0.5	0.6	0.2	0.2

Figure 10 Scale of the opinion on the Cluster - Cluster boxplots





Cluster 1 has high scores on factors 1 and 2 and moderate scores on factors 3, 4 and 5. Firms that are in the Group 1 (8 firms) are firms that agree with the fact that networking and knowledge/resources sharing among firms within the cluster has a positive impact on its internationalization process (Factor 1), and they also agree that the cluster's good reputation and its innovative capacity have a positive influence on the internationalization process of firms (Factor 2). With moderate scores but still relevant are the factors 3, 4 and 5 that shows that firms inside the group 1 also have a positive opinion about the "Leader firms' effect and competitiveness" on internationalization; the "Heterogeneity of firms" and its consequences on the level of internationalization; and the positive impact of the presence of foreign multinationals on the internationalization process of other firms.

Cluster 2 has high scores on factors 1, 4 and 5, moderate scores on factors 2 and 3. Firms that belong to Group 2 (11 firms) also agree with the fact that networking and knowledge/resources sharing among firms within the same cluster has a positive impact on its internationalization process and also have a positive opinion about the "Heterogeneity of firms" and its consequences on the level of internationalization, as

well the positive impact of the presence of foreign multinationals on the internationalization process of other firms. With moderate scores but still relevant are the factors 2 and 3 which means that firms inside this group also have a positive opinion about cluster's good reputation and its innovative capacity and how it can influence positively the internationalization process of firms; and about the "Leader firms' effect and competitiveness" on internationalization.

Cluster 3 has high scores on factors 1 and 4, moderate scores on factors 2 and 3 and a low score on factor 5. Firms that are in Group 3 (6 firms) agree with the fact that networking and knowledge/resources sharing among firms within the same cluster has a positive impact on its internationalization process and also agree about the "Heterogeneity of firms" and its consequences on the level of internationalization. With moderate scores are the factors 2 and 3 which means that the firms of this group also agree that the cluster's good reputation and its innovative capacity have a positive influence on the internationalization process of firms and the positive impact that "Leader firms' effect and competitiveness" have on internationalization. In the other hand these firms don't agree with the positive relation between the presence of foreign multinationals and the internationalization process of other firms.

Cluster 4 has a high score on factor 1 and moderate scores on factors 2, 3, 4 and 5. Firms inside Group 4 (4 firms) agree with the fact that networking and knowledge/resources sharing among firms within the same cluster has a positive impact on its internationalization process. These firms also agree, although with a moderate score, that the cluster's good reputation and its innovative capacity have a positive influence on the internationalization process of firms; with the positive impact that "Leader firms' effect and competitiveness" have on internationalization; with the "Heterogeneity of firms" and its consequences on the level of internationalization; and the positive impact of the presence of foreign multinationals on the internationalization process of other firms. This Cluster is interesting to analyse since its firms have a higher score in Factor 1, related with networking and knowledge share, and low scores in the other factors. To observe if there is some similarity among these firms, the table below has their responses about their business and international activity:

Table 26 Opinion on the Cluster - Characterization of the Cluster 4

Cluster 4							
Firm	Own Bran	Turnover	N.º of Employees	Outsourced?	Use of outsourcing?	% exports in sales	N.º of export markets
5	Yes	2 - 9M€	50 - 249	Yes	No	99.99%	1
23	No	2 - 9M€	50 - 249	No	Yes	99%	2 - 5
30	No	2 - 9M€	50 - 249	No	No	15%	>10
47	Yes	2 - 9M€	50 - 249	No	No	84%	2 - 5

The dimension of these firms is in the same number range (turnover and number of employees). The remaining characteristics are different among firms, but no clear pattern exists in their responses.

Cluster 5 has a very high score on factor 1, high scores on factors 2 and 3, a moderate score on factor 4 and a low score on factor 5. Firms inside Group 5 (4 firms) strongly agree with the fact that networking and knowledge/ resources sharing among firms within the same cluster has a positive impact on its internationalization process. They also agree that the cluster's good reputation and its innovative capacity have a positive influence on the internationalization process of firms and with the positive impact that "Leader firms' effect and competitiveness" have on internationalization. These firms also have a positive opinion, although with moderate scores but also relevant, about the "Heterogeneity of firms" and its consequences on the level of its internationalization. In the other hand, these firms do not have a strong positive opinion about the positive impact of the presence of foreign multinationals on the internationalization process of other firms.

Cluster 6 has high scores on factors 2 and 4 and moderate scores on factors 1, 3 and 5. Firms that belong to Group 6 (5 firms) strongly agree that the cluster's good reputation and its innovative capacity have a positive influence on the internationalization process of firms and the "Heterogeneity of firms" and its consequences on the level of its internationalization. These firms also have a positive opinion, although with moderate scores but also relevant, about the fact that networking and knowledge/ resources sharing among firms within the same cluster has a positive impact on its internationalization process; the positive impact that "Leader firms' effect and

competitiveness” have on internationalization and; the positive impact of the presence of foreign multinationals on the internationalization process of other firms.

Cluster 7 has high scores on factors 1, 2 and 4, a moderate score on factor 3 and a low score on factor 5. Firms inside Group 7 (5 firms) agree with the fact that networking and knowledge/ resources sharing among firms within the same cluster has a positive impact on its internationalization process; that the cluster’s good reputation and its innovative capacity have a positive influence on the internationalization process of firms; and about the “Heterogeneity of firms” and its consequences on the level of its internationalization. These firms also have a positive opinion, although with moderate scores, about the positive impact that “Leader firms’ effect and competitiveness” have on internationalization. In the other hand, these firms do not have a strong positive opinion about the positive impact of the presence of foreign multinationals on the internationalization process of other firms.

Cluster 8 has a very high score on factor 4, a high score on factor 3, moderate scores on factors 1 and 5 and a low score on factor 2. Firms inside Group 8 (2 firms) strongly agree that “Heterogeneity of firms” brings consequences on the level of its internationalization, and also agree about the positive impact that “Leader firms’ effect and competitiveness” have on internationalization. They also have a positive opinion, although with moderate scores, about the fact that networking and knowledge/ resources sharing among firms within the same cluster has a positive impact on its internationalization process and about the positive impact of the presence of foreign multinationals on the internationalization process of other firms. In the other hand, these firms do not have a strong positive opinion that the cluster’s good reputation and its innovative capacity have a positive influence on the internationalization process of firms.

This Cluster is interesting to analyse since its firms have higher scores in Factor 3 and 4 related with heterogeneity of firms and the Leader firms’ effect, and the fact that the other factors have low scores.

To observe if there is some similarity among these firms, the table below has their responses about their business and international activity:

Table 27 Opinion on the Cluster - Characterization of the Cluster 8

Cluster 8							
Firm	Own Bran	Turnover	N.º of Employees	Outsourced?	Use of outsourcing?	% exports in sales	N.º of export markets
15	No	10 - 49 M€	50 - 249	No	Yes	100%	2 - 5
35	Yes	10 - 49 M€	50 - 249	No	Yes	80%	5 - 10

The dimension of these firms is in the same number range (turnover and number of employees). Both firms use outsourcing and have a high percentage of exports in their sales.

Cluster 9 has a very high score on factor 1, a high score on factor 4, a moderate score on factor 2, a low score on factor 5 and a very low score on factor 3. Firms that belong to Group 9 (2 firms) strongly agree with the fact that networking and knowledge/resources sharing among firms within the same cluster has a positive impact on its internationalization process, and also agree that “Heterogeneity of firms” brings consequences on the level of its internationalization. They also have a positive opinion, although with moderate scores, that the cluster’s good reputation and its innovative capacity have a positive influence on the internationalization process of firms. In the other hand with low and very low scores, these firms do not have a strong positive opinion about the positive impact of the presence of foreign multinationals on the internationalization process of other firms and about the positive impact that “Leader firms’ effect and competitiveness” have on internationalization.

This Cluster is interesting to analyse since its firms have higher score in Factor 1 and 4 related with networking and knowledge share and the Leader firms’ effect, and the other factors have low scores. To observe if there is some similarity among these firms, the table below has their responses about their business and international activity:

Table 28 Opinion on the Cluster - Characterization of the Cluster 9

Cluster 9							
Firm	Own Bran	Turnover	N.º of Employees	Outsourced?	Use of outsourcing?	% exports in sales	N.º of export markets
37	Yes	<2 M€	10 - 49	Yes	No	90%	2 - 5
40	Yes	<2 M€	10 - 49	Yes	No	80%	2 - 5

There are great similarities between these two firms as it is clear in their responses. These firms have the same dimension in turnover and number of employees. Both have own brand and use outsourcing. They have high percentage of exports in their sales and the range of number of export markets is the same.

3.3. Importance for the internationalization process

3.3.1. Exploratory analysis

The frequencies of the different responses to the scale of the level of importance for the firm's internationalization process are displayed on the next table:

- Possuir marca(s) própria(s) – “Important” is the most frequent response (38.3% of the firms), followed by “Very important” (25.5%), “Indifferent” (21.3%), “A little important” (10.6%) and “Not important” (4.3%). Therefore, the level of importance is moderate (note that “Important” and “Very important” jointly represent 63.8% of the firms).
- Possuir recursos humanos qualificados – “Very important” is the most frequent response (46.8% of the firms), followed by “Important” (38.3%), “Indifferent” (8.5%), “A little important” (4.3%) and “Not important” (2.1%). Therefore, the level of importance is high (note that “Important” and “Very important” jointly represent 85.1% of the firms).
- Possuir competências linguísticas – “Very important” represents the majority of the responses (55.3% of the firms), followed by “Important” (38.3%) and “Indifferent”, “A little important” and “Not important” (2.1% each). Therefore, the level of importance is very high (note that “Important” and “Very important” jointly represent 93.6% of the firms).
- Aceder a recursos financeiros – “Important” represents the majority of the responses (53.2% of the firms), followed by “Very important” (27.7%), “Indifferent” (14.9%) and “A little important” (4.3%), not existing any “Not important” responses. Therefore, the level of importance is high (note that “Important” and “Very important” jointly represent 80.9% of the firms).
- Investir em Marketing – “Important” represents the majority of the responses (59.6% of the firms), followed by “Indifferent” (23.4%), “Very important” (10.6%) and “A little important” (6.4%), not existing any “Not important” responses. Therefore, the level of importance is high (note that “Important” and “Very important” jointly represent 70.2% of the firms).

- Investir em Design – “Important” represents the majority of the responses (57.4% of the firms), followed by “Very important” (23.4%), “Indifferent” (17%) and “A little important” (2.1%), not existing any “Not important” responses. Therefore, the level of importance is high (note that “Important” and “Very important” jointly represent 80.9% of the firms).
- Investir em I&D – “Important” is the most frequent response (46.8% of the firms), followed by “Indifferent” (38.3%), “Very important” (12.8%) and “A little important” (2.1%), not existing any “Not important” responses. Therefore, the level of importance is moderate (note that “Important” and “Very important” jointly represent 59.6% of the firms).
- Investir em Inovação – “Important” represents the majority of the responses (63.8% of the firms), followed by “Very important” (21.3%) and “Indifferent” (14.9%), not existing any “A little important” or “Not important” responses. Therefore, the level of importance is high (note that “Important” and “Very important” jointly represent 85.1% of the firms).
- Desenvolver novos produtos – “Important” represents the majority of the responses (53.2% of the firms), followed by “Very important” (36.2%) and “Indifferent” (10.6%), not existing any “A little important” or “Not important” responses. Therefore, the level of importance is high (note that “Important” and “Very important” jointly represent 89.4% of the firms).
- Conhecer os mercados externos – “Very important” represents the majority of the responses (57.4% of the firms), followed by “Important” (34%) and “Indifferent” (8.5%), not existing any “A little important” or “Not important” responses. Therefore, the level of importance is very high (note that “Important” and “Very important” jointly represent 91.5% of the firms).
- Desenvolver uma rede de contactos internacionais – “Very important” represents the majority of the responses (57.4% of the firms), followed by “Important” (29.8%) and “Indifferent” (12.8%), not existing any “A little important” or “Not important” responses. Therefore, the level of importance is high (note that “Important” and “Very important” jointly represent 87.2% of the firms).
- Participar em feiras internacionais – “Important” is the most frequent response (44.7% of the firms), followed by “Very important” (31.9%), “Indifferent” (19.1%) and “A

little important” (10.6%), not existing any “Not important” responses. Therefore, the level of importance is high (note that “Important” and “Very important” jointly represent 76.6% of the firms).

- Ter relações próximas com empresas do Cluster – “Indifferent” is the most frequent response (40.4% of the firms), followed by “Important” (38.3%), “Very important” (14.9%) and “A little important” (6.4%), not existing any “Not important” responses. Therefore, the level of importance is moderate (note that “Important” and “Very important” jointly represent 53.2% of the firms).
- Ter relações próximas com Universidades – “Indifferent” represents the majority of the responses (53.2% of the firms), followed by “A little important” (19.1%), “Important” (17%), “Very important” (6.4%) and “Not important” (4.3%). Therefore, the level of importance is low (note that “Important” and “Very important” jointly represent only 23.4% of the firms or, conversely, “Not important”, “A little important” and “Indifferent” jointly represent 76.6%).
- Ter relações próximas com centros tecnológicos – “Important” is the most frequent response (40.4% of the firms), followed by “Indifferent” (36.2%), “Very important” (12.8%), “A little important” (8.5%) and “Not important” (2.1%). Therefore, the level of importance is moderate (note that “Important” and “Very important” jointly represent 53.2% of the firms).
- Ter relações próximas com instituições de promoção da internacionalização – “Important” represents the majority of the responses (59.6% of the firms), followed by “Indifferent” (21.3%), “Very important” (12.8%), “A little important” (4.3%) and “Not important” (2.1%). Therefore, the level of importance is high (note that “Important” and “Very important” jointly represent 72.3% of the firms).

Table 29 Importance for the internationalization process

Item	Frequencies									
	Not important		A little important		Indifferent		Important		Very important	
	n	%	n	%	n	%	n	%	n	%
1	2	4.3	5	10.6	10	21.3	18	38.3	12	25.5
2	1	2.1	2	4.3	4	8.5	18	38.3	22	46.8
3	1	2.1	1	2.1	1	2.1	18	38.3	26	55.3
4	0	0.0	2	4.3	7	14.9	25	53.2	13	27.7
5	0	0.0	3	6.4	11	23.4	28	59.6	5	10.6
6	0	0.0	1	2.1	8	17.0	27	57.4	11	23.4
7	0	0.0	1	2.1	18	38.3	22	46.8	6	12.8
8	0	0.0	0	0.0	7	14.9	30	63.8	10	21.3
9	0	0.0	0	0.0	5	10.6	25	53.2	17	36.2
10	0	0.0	0	0.0	4	8.5	16	34.0	27	57.4
11	0	0.0	0	0.0	6	12.8	14	29.8	27	57.4
12	0	0.0	2	4.3	9	19.1	21	44.7	15	31.9
13	0	0.0	3	6.4	19	40.4	18	38.3	7	14.9
14	2	4.3	9	19.1	25	53.2	8	17.0	3	6.4
15	1	2.1	4	8.5	17	36.2	19	40.4	6	12.8
16	1	2.1	2	4.3	10	21.3	28	59.6	6	12.8

3.3.2. Scale conceptual structure

A factor analysis of this questionnaire was also run, for details see appendix D.

The results of the factorial analysis forced to 5 factors with varimax rotation and Kaiser normalization are displayed in the next table where the factor loadings are shown with the largest loading of each item in bold (note that the items are ordered according to the factor where they saturate and not according to the order they appear in the questionnaire). Other factor solutions were tried, especially that with 7 factors, but the solution with 5 factors proved to be the most appropriate which means that 5 factors are enough to describe the structure underlying the data (latent structure).

Most of the factor loadings are high or at least acceptable which leads again to the conclusion that this factor solution is satisfactory. The table also displays the communalities, i.e., the proportion of the variance of each item explained by the 5 extracted factors together. That proportion is much larger than 50% for every item (larger than 0.7 in most cases) and is high or at least acceptable implying again that the results of this factor analysis are reliable.

Table 30 Scale of the importance for the internationalization process - Factor structure

Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Com.
6	0.575	0.031	0.512	-0.109	0.394	0.760
9	0.779	0.078	0.081	0.197	0.120	0.672
10	0.856	0.086	0.213	0.217	0.020	0.833
11	0.750	0.164	0.272	0.266	-0.041	0.736
4	0.309	0.674	0.164	0.348	-0.186	0.733
13	0.288	0.815	-0.153	0.221	0.136	0.837
15	0.000	0.780	0.204	0.054	0.220	0.702
7	0.299	0.043	0.722	0.087	0.116	0.633
8	0.241	0.123	0.752	0.147	0.027	0.661
16	-0.340	0.453	0.484	0.247	-0.032	0.617
2	0.190	0.118	0.276	0.830	0.193	0.852
3	0.301	0.261	0.090	0.746	0.120	0.738
1	-0.003	-0.066	0.014	0.316	0.821	0.778
5	0.315	0.329	0.264	0.063	0.630	0.678
12	0.312	0.243	-0.277	0.450	0.473	0.659
14	-0.283	0.494	0.224	-0.255	0.547	0.739

The first factor shows high loadings in items 6, 9, 10 and 11. Items 6 and 9 refer to the investment in Design and new products' development, and items 10 and 11 refer to the knowledge about international markets and the development of an international-business network. These 4 items together make a lot of sense in terms of firms' internationalization process. This factor suggest that investments in design and new products are valued as important by firms that are able to export such goods due to their knowledge about international markets and their international business relations.

Therefore, this factor may be called as “Design and product development versus international business capabilities”.

The second factor shows high loadings in items 4, 13 and 15. Item 4 considers the importance to access to financial resources. Items 13 and 14 refer to the importance of close relationships with institutions inside the footwear cluster, namely with firms and the Technological Centre. This factor reveals that firms that consider the access to financial resources important to their internationalization process also value the intra-cluster relationships (networking). As seen in the previous section such networking is also associated with accessing resources and knowledge sharing. Thus, we may consider this factor as "Networking with firms and the technological center of the Footwear Industry, plus accessing to financial resources are crucial to the internationalization of its firms”.

The third factor shows high loadings in items 7, 8 and item 16, but the latter with a lower value. This factor shows clearly that firms that consider important to invest in R&D and Innovation, for their internationalization process (items 7 and 8), also value the cooperation with institutions to promote their business in international markets (item 16). This is in line with the result found in the previous section and therefore reinforces it. This factor may be designated as “Investing in R&D and Innovation to promote/expand business in international markets.

The fourth factor shows high loadings in items 2 and 3. They are extremely important for the internationalization process of the respondents' firm. Thus firms that consider very important to possess qualified human resources (item 2) also attribute high value to the linguistic capabilities (item 3) which makes all sense. This factor may be designated as "Qualified Human Resources and Linguistic capabilities for International Business"

The fifth factor shows high loadings in items 1, 5, 12 and 14 and consequently this factor may be called the dimension of “The promotion of own brand in international fairs can initiate or enhance the international activity of firms”.

Items 1 and 5 relate, respectively, to own brand and marketing and item 12 relates to international fairs participation, so these 3 are interconnected because marketing is essential to the creation and development of brand recognition, and this is mostly done in international fairs. Item 14 is related with the cooperation with universities, which can be related with the integration of graduates in the firms with the aim to promote the firm's business and brand.

The quality of the factor model was assessed and the conclusion is that both the total questionnaire and the factors show a good reliability and internal consistency (see appendix E).

3.3.3. Cluster analysis

A hierarchical cluster analysis with Ward linkage and squared euclidean distance was also run based on the 5 factors previously obtained in the factorial analysis and on the (nonstandardized) factor scores.

Selection of the number of clusters was based on the inertia (variance) decomposition in within-cluster and between-cluster inertia computed from an analysis of variance, which also allows the computation of the inertia proportion explained by each considered partition (R^2 coefficient), and on the analysis of the dendrogram shown below where the different partitions and their meaning were assessed. Therefore, the next table and plot display the inertia proportions mentioned above, suggesting a solution with 8 clusters because this is where both the decrease of the within-cluster inertia or the increase of the between-cluster inertia start slowing down. The proportions are 33.8% and 66.2% respectively which is acceptable and the dendrogram also suggests the same solution, even though 9 clusters would also be possible (but the 9-cluster solution would lead to several clusters with a very low number of firms). Therefore, the solution with 8 clusters was selected.

Table 31 Scale of the importance for the internationalization process - Within-cluster and between-cluster inertia

Number of clusters	Within-cluster	Between-cluster
1	100.0	0.0
2	82.9	17.1
3	70.5	29.5
4	59.7	40.3
5	50.7	49.3
6	44.7	55.3
7	38.7	61.3
8	33.8	66.2
9	30.9	69.1
10	28.1	71.9

Figure 11 Scale of the importance for the internationalization process - Plot of within-cluster and between-cluster inertia

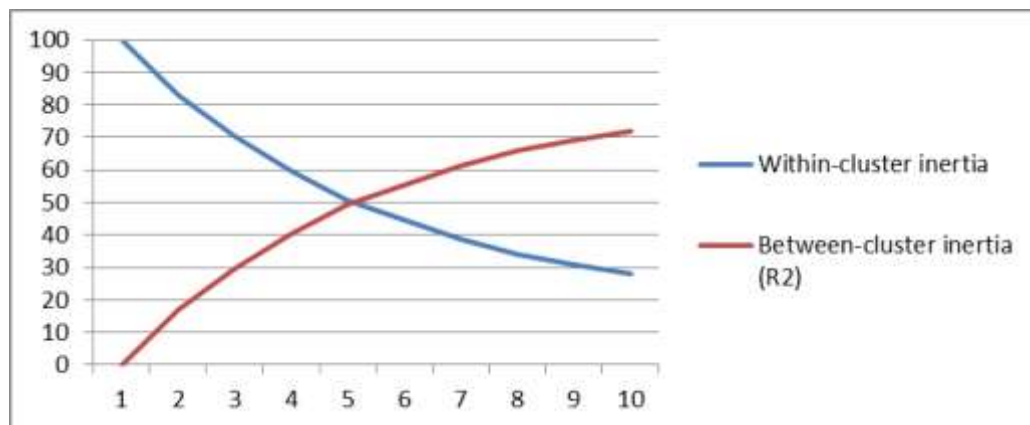
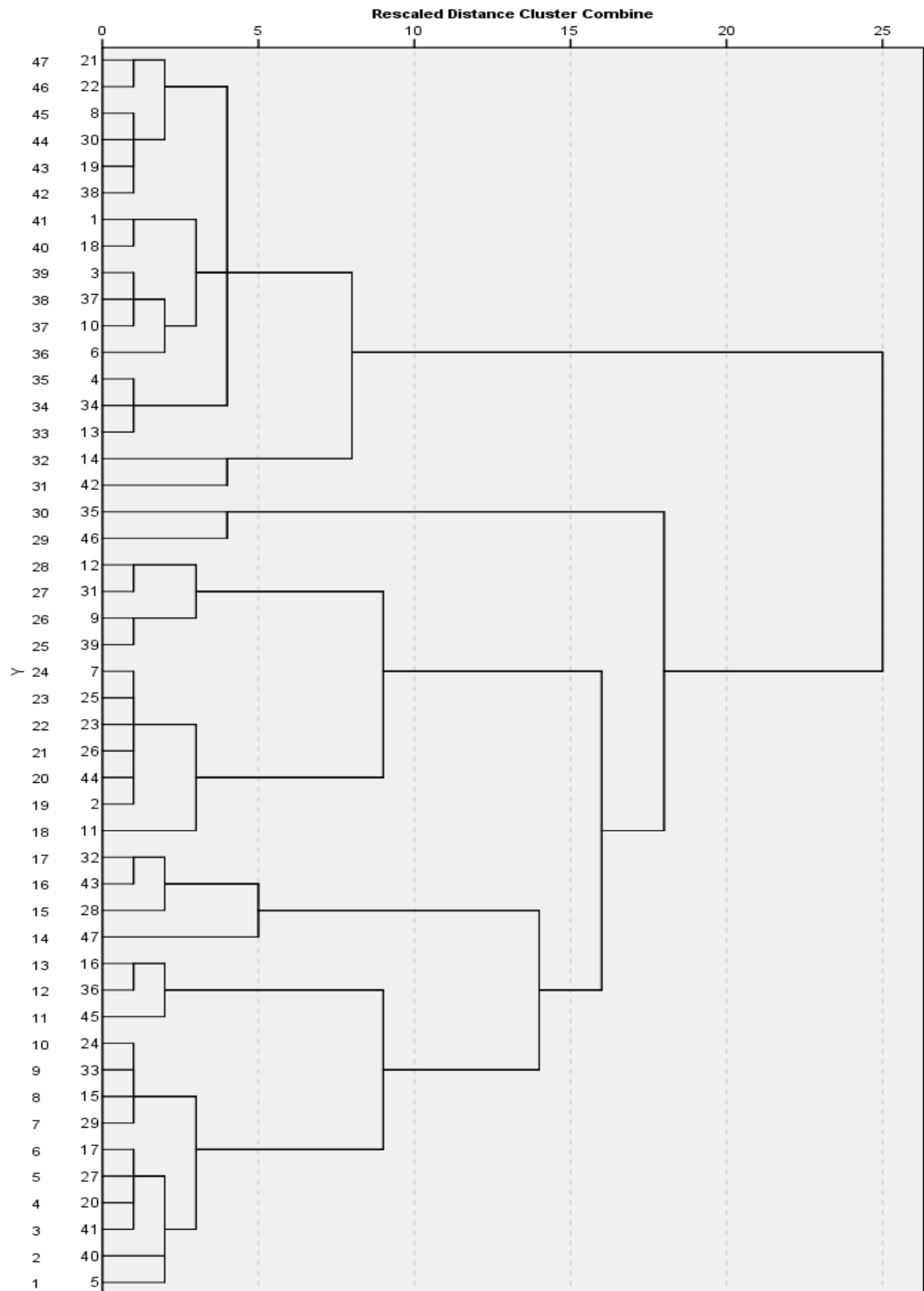


Figure 12 Scale of the importance for the internationalization process - Dendrogram – Ward linkage/Squared euclidean distance



Cluster membership is displayed in the next table.

Table 32 Scale of the importance for the internationalization process - Cluster membership

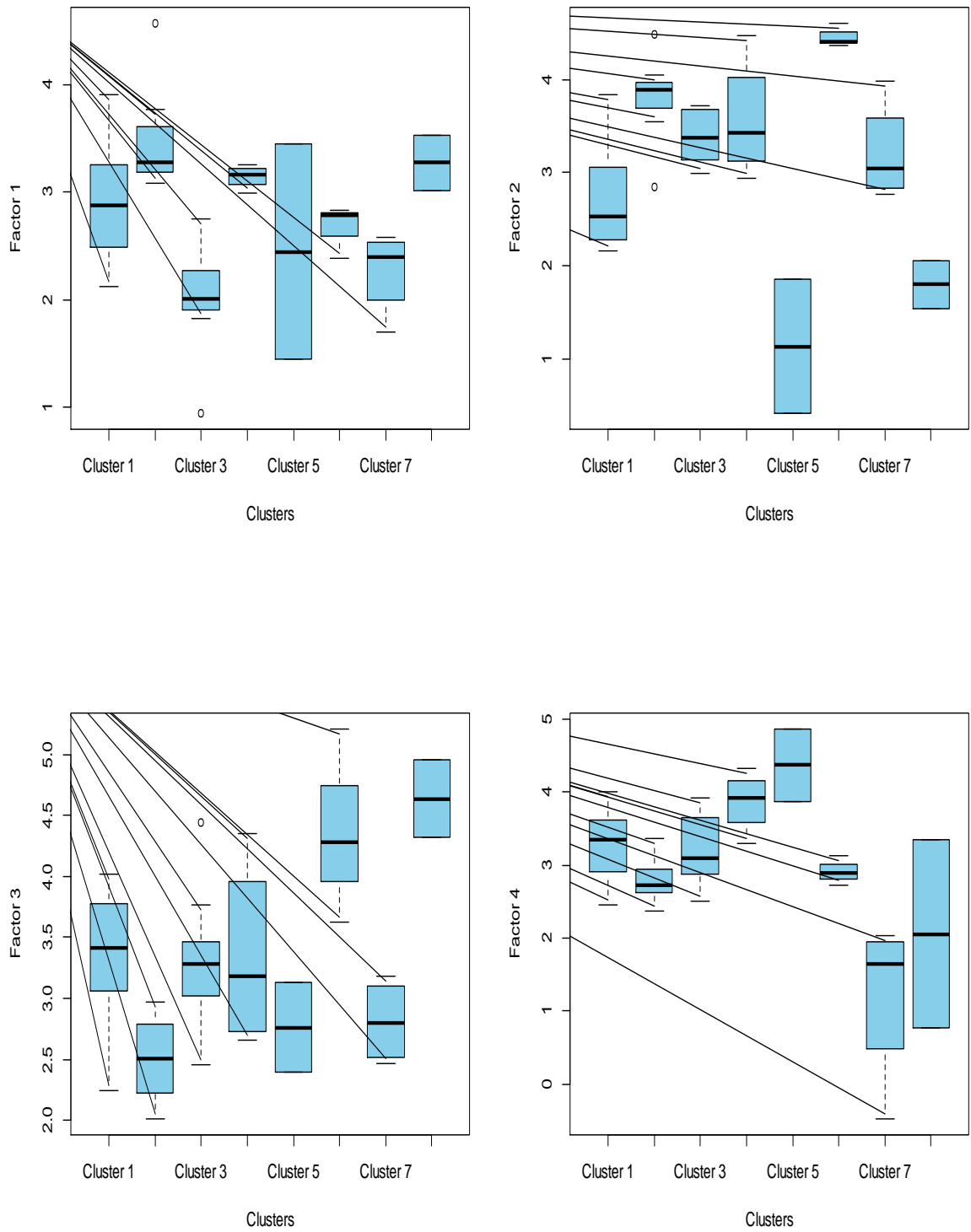
Firm	Cluster	Firm	Cluster	Firm	Cluster	Firm	Cluster
1	1	13	1	25	2	37	1
2	2	14	5	26	2	38	1
3	1	15	3	27	3	39	4
4	1	16	6	28	7	40	3
5	3	17	3	29	3	41	3
6	1	18	1	30	1	42	5
7	2	19	1	31	4	43	7
8	1	20	3	32	7	44	2
9	4	21	1	33	3	45	6
10	1	22	1	34	1	46	8
11	2	23	2	35	8	47	7
12	4	24	3	36	6		

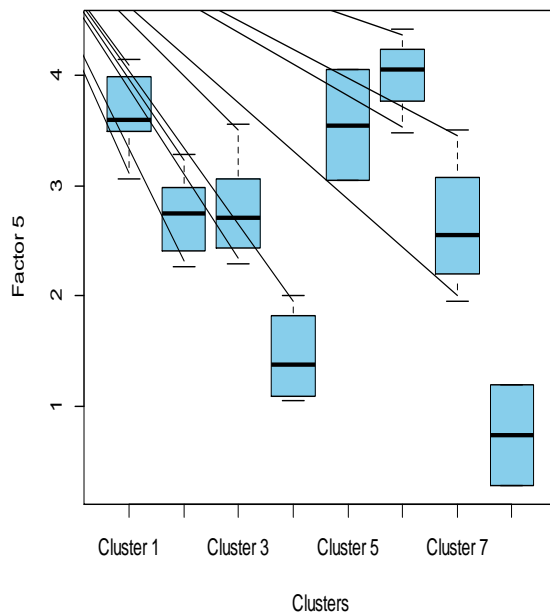
Cluster interpretation was done next based on the meaning of the factors resulting from the factorial analysis previously run. The mean factor score and standard deviation of each cluster are displayed in the next table and the boxplots show the score distribution for each cluster.

Table 33 Scale of the importance for the internationalization process - Cluster mean and standard deviation

Cluster		Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
1	Mean	2.9	2.7	3.4	3.3	3.7
	Standard deviation	0.5	0.5	0.5	0.5	0.3
2	Mean	3.5	3.8	2.5	2.8	2.7
	Standard deviation	0.5	0.5	0.4	0.3	0.4
3	Mean	2.0	3.4	3.3	3.2	2.8
	Standard deviation	0.5	0.3	0.5	0.5	0.5
4	Mean	3.1	3.6	3.3	3.9	1.5
	Standard deviation	0.1	0.7	0.8	0.4	0.4
5	Mean	2.4	1.1	2.8	4.4	3.5
	Standard deviation	1.4	1.0	0.5	0.7	0.7
6	Mean	2.7	4.5	4.4	2.9	4.0
	Standard deviation	0.2	0.1	0.8	0.2	0.5
7	Mean	2.3	3.2	2.8	1.2	2.6
	Standard deviation	0.4	0.5	0.3	1.2	0.6
8	Mean	3.3	1.8	4.6	2.1	0.7
	Standard deviation	0.4	0.4	0.5	1.8	0.6

Figure 13 Scale of the importance for the internationalization process - Cluster boxplots





Cluster 1 has high scores on factors 3, 4 and 5 and moderate scores on factors 1 and 2, ranging from 3.7 to 2.7. This is the biggest cluster, and its 15 firms agree that the most important factors for their internationalization process are the following: “Marketing of Own Brands in International Fairs”; “R&D and Innovation plus International Promotion”; “Qualified Human Resources for International Business”. These firms also agree, although with moderate scores, that investment in new products encourage exporting to new markets and the Networking and Cooperation with firms and technological centers of the same sector (the footwear sector) with the necessary financial resources, are crucial to the internationalization of firms.

Cluster 2 has high scores on factors 1 and 2 and moderate scores on factors 3, 4 and 5, somehow this is similar to cluster 1 but the factors’ scores rank inversely, ranging from 3.8 to 2.5. There are 7 firms in this cluster and they agree that the most important factors in their internationalization process are the following: “Design and Development of New Products plus International Markets Knowledge and Relationships”; and “Networking with Firms and the Technological Center within the Footwear Cluster and

Financial Resources”. These firms also agree on the importance of other factors (those described in cluster 1) but with moderate scores.

Cluster 3 has high scores in factors 2, 3 and 4 and moderate scores in factors 5 and 1, ranging from 3.4 to 2.0. This cluster includes 10 firms that consider most important to their internationalizations the following factors: “Networking with Firms and the Technological Center within the Footwear Cluster and Financial Resources”; “R&D and Innovation plus International Promotion”; and “Qualified Human Resources for International Business”. These firms also agree, although with moderate scores, on the importance of the remaining factors. Yet one must notice that among all clusters this one attributes the lowest score to factor 1 - “Design and Development of New Products plus International Markets Knowledge and Relationships”.

Cluster 4 has high scores in factors 4, 2, 3 and 1 and a low score in factor 5, score values range from 3.9 to 1.5. The 4 firms in this cluster agree that 4 factors are important in their internationalization process, namely: “Qualified Human Resources for International Business”; “Networking with Firms and the Technological Center within the Footwear Cluster and Financial Resources”; “R&D and Innovation plus International Promotion”; and “Design and Development of New Products plus International Markets Knowledge and Relationships”. Compared to other clusters these firms attribute low importance to factor 5 (the second lowest score), in other words “Marketing of Own Brands in International Fairs” is not important to enhance their international business.

Cluster 5 has a very high score in factor 4, a high score in factor 5, moderate scores in factors 1 and 3 and a low score in factor 2, values range from 4.4 to 1.1. The 2 firms in this cluster strongly agree that “Qualified Human Resources for International Business” are crucial to their internationalization process, and also the “Marketing of Own Brands in International Fairs”. In contrast, these firms do not have a strong opinion that “Networking with Firms and the Technological Center within the Footwear Cluster and Financial Resources” are crucial to their internationalization, they attribute the lowest score to this factor among all clusters. These firms value much more, the importance of

their specific resources and capabilities for their success in international markets, than the networking activity within the footwear cluster which they consider of little importance.

Cluster 6 has very high scores in factors 2, 3 and 5 and moderate scores in factors 1 and 4, scores values range from 4.5 to 2.7. These firms are particular because, among all clusters, it is the one that recognizes the highest importance of the following factors: “Networking with Firms and the Technological Center within the Footwear Cluster and accessing Financial Resources” (in great contrast with cluster 5), “R&D, Innovation and International Promotion”, plus Marketing of Own Brands in International Fairs (in great contrast with cluster 8) for their internationalization process. These firms also have a positive opinion, although with moderate scores, that investments in design and new products, and International Business capabilities on the one hand, and qualified Human Resources, on the other hand, are important in their internationalization process.

Cluster 7 has a high score in factor 2, moderate scores in factors 1, 3 and 5 and a low score in factor 4, score values range from 1.2 to 3.2. The 4 firms in this cluster agree with the fact that “Networking with Firms and the Technological Center within the Footwear Cluster and accessing Financial Resources” is crucial to their internationalization process. They also agree, although with moderate scores, that factors such as investments in design and new products, and International Business capabilities, plus research, Innovation and International Promotion and that the promotion of own brand in international fairs are also important. In particular, these firms differ from all other clusters as they score very low the importance of “Qualified Human Resources for International Business” in their internationalization.

Cluster 8 has a very high score on factor 3, a high score on factor 1, a moderate score on factor 4, a low score on factor 2 and a very low score on factor 5, score values register the biggest range from 4.6 to 0.7. The 2 firms in this cluster strongly agree on the very high importance (the highest score among all clusters) that “R&D, Innovation and International Promotion” has on their internationalization, and also that “Design, Development of New Products plus International Markets Knowledge and

Relationships” is important with a relatively high score. They also agree on the very low importance (the lowest score among all clusters) that “Marketing of Own Brands in International Fairs” has in their internationalization. Finally, they also have a relatively low score on the importance of high qualified Human Resources in their internationalization process.

The previous cluster analysis clearly reveals that the respondent firms have heterogeneous assessment/classification about the importance that different factors play in the development of their international business. This seems to confirm the hypothesis about firms’ heterogeneity.

3.4. Cluster's importance/contribution

3.4.1. Exploratory analysis

The frequencies of the different responses to the scale of the cluster's importance/contribution are displayed on the next table:

- Aquisição de recursos humanos especializados – “Important” represents the majority of the responses (53.2% of the firms), followed by “Indifferent” (25.5%), “Very important” (14.9%), “Not important” (4.3%) and “A little important” (2.1%). Therefore, the level of importance is moderate (note that “Important” and “Very important” jointly represent 68.1% of the firms).
- Acesso a recursos financeiros – “Important” represents the majority of the responses (63.8% of the firms), followed by “Indifferent” (21.3%), “Very important” (10.6%) and “Not important” and “A little important” (2.1% each). Therefore, the level of importance is high (note that “Important” and “Very important” jointly represent 74.5% of the firms).
- Melhoria da produtividade das empresas – “Important” represents the majority of the responses (63.8% of the firms), followed by “Very important” (25.5%), “Indifferent” (8.5%) and “A little important” (2.1%), not existing any “Not important” responses. Therefore, the level of importance is high (note that “Important” and “Very important” jointly represent 89.4% of the firms).
- Notoriedade do Setor do Calçado – “Important” represents the majority of the responses (70.2% of the firms), followed by “Indifferent” (14.9%), “Very important” (12.8%) and “Not important” (2.1%), not existing any “A little important” responses. Therefore, the level of importance is high (note that “Important” and “Very important” jointly represent 83% of the firms).
- Acesso à inovação – “Important” represents the majority of the responses (53.2% of the firms), followed by “Indifferent” (31.9%), “Very important” (8.5%) and “A little important” (6.4%), not existing any “Not important” responses. Therefore, the level of importance is moderate (note that “Important” and “Very important” jointly represent 61.7% of the firms).

- Aquisição de competências a nível de estratégias de Marketing – “Important” represents the majority of the responses (55.3% of the firms), followed by “Indifferent” (25.5%), “Very important” (10.6%) and “A little important” (8.5%), not existing any “Not important” responses. Therefore, the level of importance is moderate (note that “Important” and “Very important” jointly represent 66% of the firms).
- Aquisição de competências a nível de estratégias de Design – “Important” is the most frequent response (44.7% of the firms), followed by “Indifferent” (40.4%), “Very important” (12.8%) and “Not important” (2.1%), not existing any “A little important” responses. Therefore, the level of importance is moderate (note that “Important” and “Very important” jointly represent 57.4% of the firms).
- Aquisição de competências a nível de I&D – “Important” represents the majority of the responses (68.1% of the firms), followed by “Indifferent” (17%), “Very important” (12.8%) and “A little important” (2.1%), not existing any or “Not important” responses. Therefore, the level of importance is high (note that “Important” and “Very important” jointly represent 80.9% of the firms).
- Acesso a partilha de conhecimentos sobre os mercados externos – “Indifferent” is the most frequent response (42.6% of the firms), followed by “Important” (40.4%), “Very important” (12.8%) and “A little important” (4.3%), not existing any “Not important” responses. Therefore, the level of importance is moderate (note that “Important” and “Very important” jointly represent 53.2% of the firms).
- Acesso a redes de cooperação (networking) – “Important” represents the majority of the responses (51.1% of the firms), followed by “Indifferent” (29.8%), “Very important” (17%) and “A little important” (2.1%), not existing any “Not important” responses. Therefore, the level of importance is moderate (note that “Important” and “Very important” jointly represent 68.1% of the firms).
- Participação em feiras internacionais – “Important” is the most frequent response (48.9% of the firms), followed by “Indifferent” (25.5%), “Very important” (17%) and “A little important” (8.5%), not existing any “Not important” responses. Therefore, the level of importance is moderate (note that “Important” and “Very important” jointly represent 66% of the firms).
- Participação em atividades internacionais – “Important” represents the majority of the responses (59.6% of the firms), followed by “Indifferent” (27.7%) and “Very

important” (12.8%), not existing any “A little important” or “Not important” responses. Therefore, the level of importance is high (note that “Important” and “Very important” jointly represent 72.3% of the firms).

Table 34 Cluster’s importance/contribution

Item	Frequencies									
	Not important		A little important		Indifferent		Important		Very important	
	n	%	n	%	n	%	n	%	n	%
1	2	4.3	1	2.1	12	25.5	25	53.2	7	14.9
2	1	2.1	1	2.1	10	21.3	30	63.8	5	10.6
3	0	0.0	1	2.1	4	8.5	30	63.8	12	25.5
4	1	2.1	0	0.0	7	14.9	33	70.2	6	12.8
5	0	0.0	3	6.4	15	31.9	25	53.2	4	8.5
6	0	0.0	4	8.5	12	25.5	26	55.3	5	10.6
7	1	2.1	0	0.0	19	40.4	21	44.7	6	12.8
8	0	0.0	1	2.1	8	17.0	32	68.1	6	12.8
9	0	0.0	2	4.3	20	42.6	19	40.4	6	12.8
10	0	0.0	1	2.1	14	29.8	24	51.1	8	17.0
11	0	0.0	4	8.5	12	25.5	23	48.9	8	17.0
12	0	0.0	0	0.0	13	27.7	28	59.6	6	12.8

3.4.2. Scale conceptual structure

A factor analysis of this questionnaire was also run, for details see appendix F.

The results of the factorial analysis forced to 3 factors with varimax rotation and Kaiser normalization are displayed in the next table where the factor loadings are shown with the largest loading of each item in bold (note that the items are ordered according to the factor where they saturate and not according to the order they appear in the questionnaire). Other factor solutions were tried, especially that with 5 factors, but the solution with 3 factors proved to be the most appropriate which means that 3 factors are enough to describe the structure underlying the data (latent structure).

Factor loadings are high or at least acceptable which leads again to the conclusion that this factor solution is satisfactory. The table also displays the communalities, i.e., the proportion of the variance of each item explained by the 3 extracted factors together. That proportion is larger than 50% for every item (larger than 0.7 in most cases) with a single exception (that is close to 50%) and is high or at least acceptable implying again that the results of this factor analysis are reliable.

Table 35 Scale of the cluster's importance/contribution - Factor structure

Item	Factor 1	Factor 2	Factor 3	Com.
1	0.622	0.306	0.293	0.566
2	0.833	0.304	0.065	0.791
3	0.825	0.060	0.341	0.801
4	0.833	0.220	0.210	0.787
7	0.739	0.429	0.018	0.730
5	0.070	0.832	0.384	0.845
6	0.461	0.602	0.297	0.664
8	0.285	0.757	0.146	0.677
9	0.414	0.775	0.132	0.789
10	0.071	0.131	0.898	0.828
11	0.341	0.228	0.495	0.413
12	0.246	0.289	0.804	0.791

Factor 1 shows high loadings in items 1, 2, 3, 4 and 7. Items 1, 2 and 7 refer to the access/acquisition of resources (financial and human) and design capabilities; items 3 and 4 refer to firms' productivity improvement and to footwear sector's notoriety. This factor makes sense because those specific resources and professional skills may contribute to the enhancement of both productivity and notoriety. As such, this factor may be designated as "Resources and Skills for Productivity and Notoriety".

Factor 2 shows high loadings in items 5, 6, 8 and 9. Items 6 and 8 relate to professional skills and capabilities (Marketing and R&D), and items 5 and 9 refer to the access to Innovation and shared knowledge about international markets. The association among these issues makes all sense because R&D and innovation are normally expensive

activities, which firms need recover through commercial competences. Consequently this factor may be called “Innovation and R&D for Marketing in International Markets”.

Factor 3 shows high loadings in items 10, 11 and 12. Item 10 refers to networking and cooperation and items 11 and 12 refer to the participation in international fairs and activities. This factor shows the Cluster as a mean of cooperation and networking among firms, entities and institutions which, as seen before, facilitates or enhance the willingness to participate in international fairs and activities. So this factor may be called "Networking and Cooperation for International Activities".

The quality of the factor model was assessed and the conclusion is that both the total questionnaire and the factors show a good reliability and internal consistency (see appendix G).

3.4.3. Cluster analysis

A hierarchical cluster analysis with Ward linkage and squared euclidean distance was also run based on the 3 factors previously obtained in the factorial analysis and on the (nonstandardized) factor scores.

The next table and plot display the within-cluster and between-cluster inertia proportions, suggesting a solution with 7 clusters because this is where both the decrease of the within-cluster inertia or the increase of the between-cluster inertia start slowing down. Although this is a good solution, the dendrogram also suggests a solution with 6 clusters which seems preferable because the seventh cluster would be formed by a single firm. Therefore, we selected a solution with 6 clusters and the proportions mentioned above are 41.4% and 58.6% respectively which is acceptable.

Table 36 Scale of the cluster's importance/contribution - Within-cluster and between-cluster inertia

Number of clusters	Within-cluster	Between-cluster
1	100.0	0.0
2	80.9	19.1
3	73.0	27.0
4	63.0	37.0
5	52.3	47.7
6	41.4	58.6
7	25.3	74.7
8	23.8	76.2
9	16.9	83.1
10	15.5	84.5

Figure 14 Scale of the cluster's importance/contribution - Plot of within-cluster and between-cluster inertia

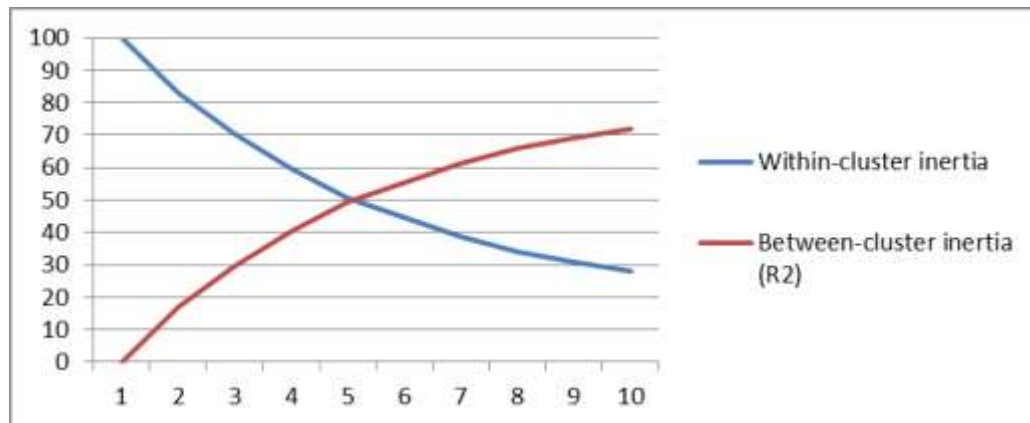
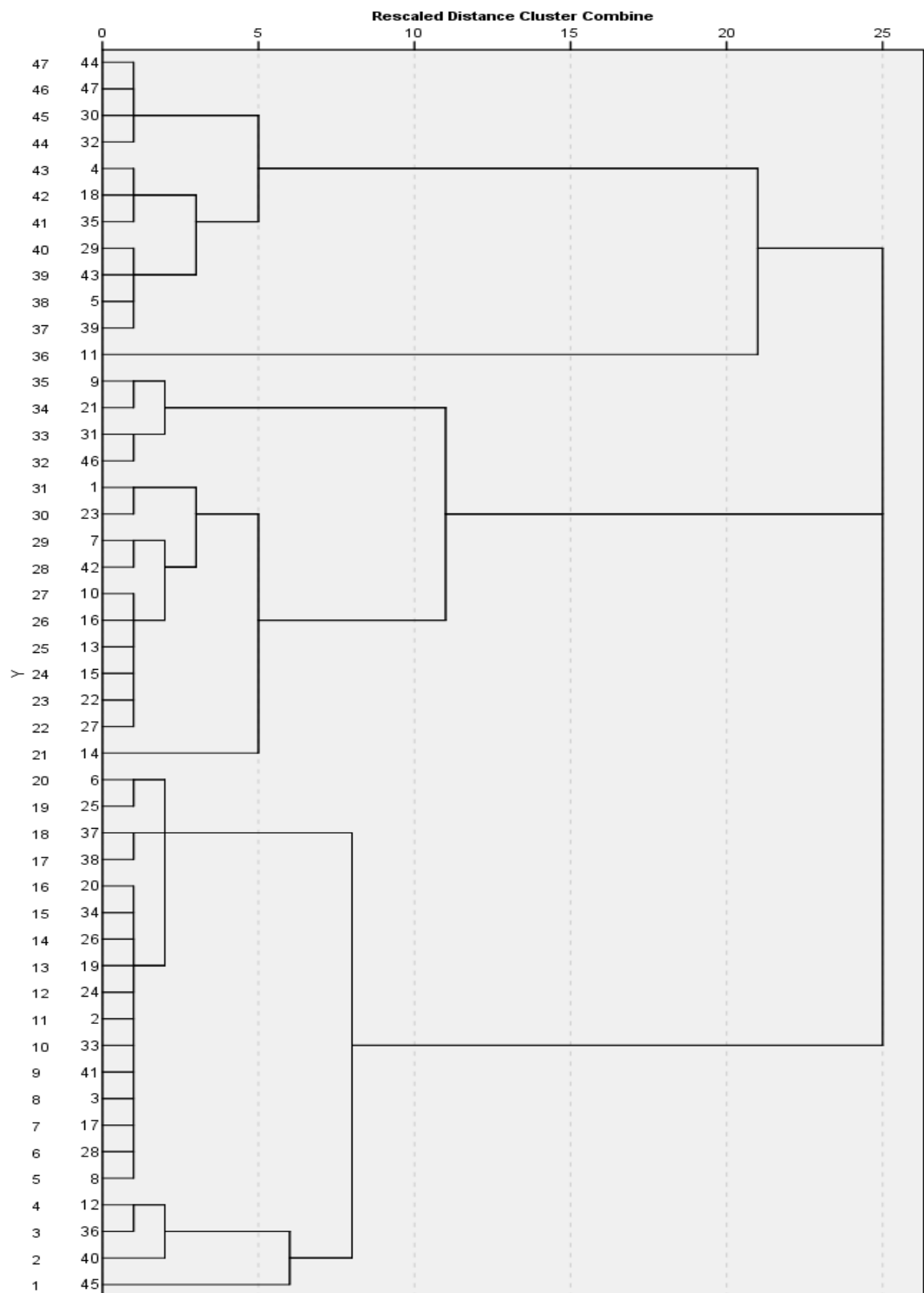


Figure 15 Scale of the cluster's importance/contribution - Dendrogram – Ward linkage/Squared euclidean distance



Cluster membership is displayed in the next table.

Table 37 Scale of the cluster's importance/contribution - Cluster membership

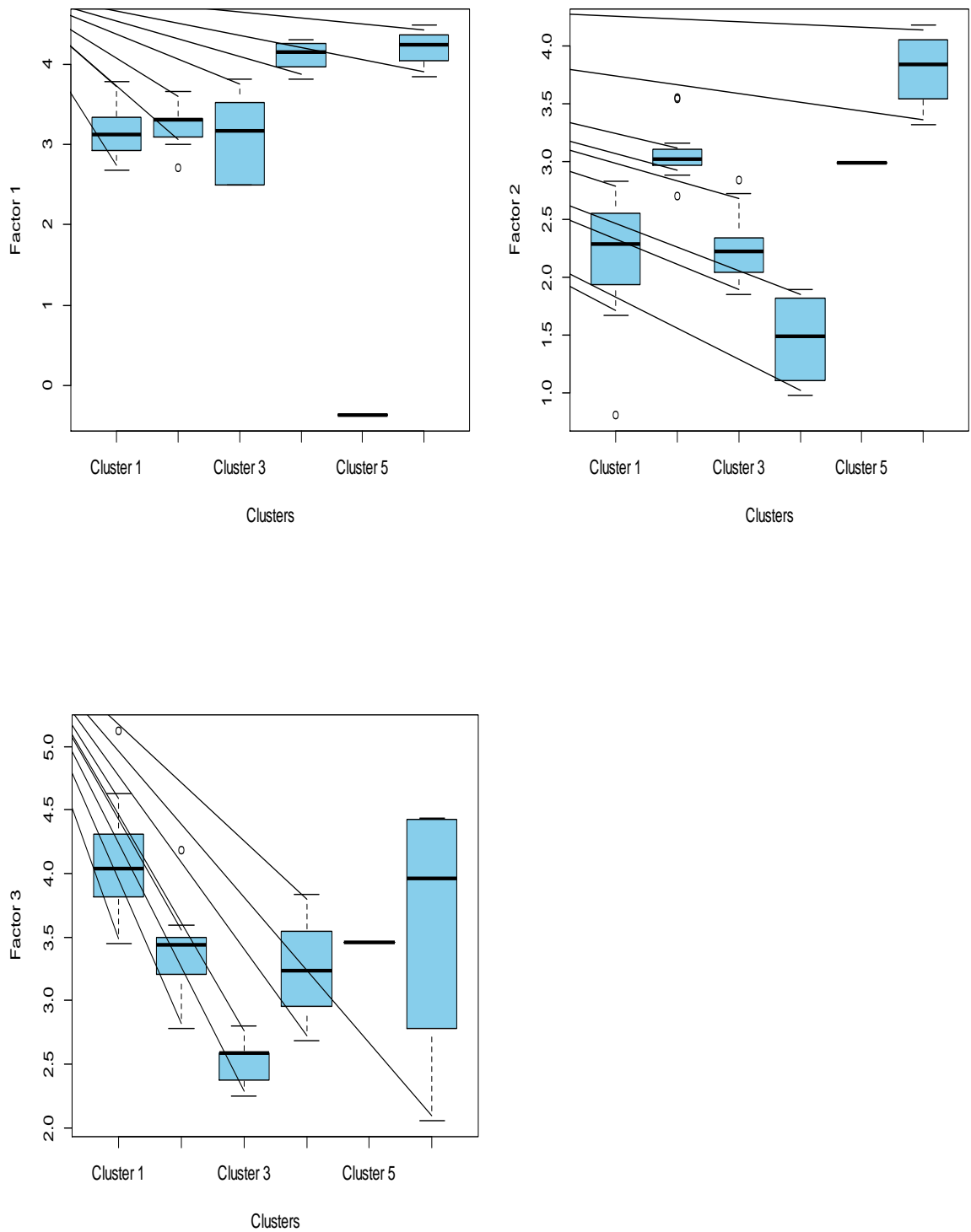
Firm	Cluster	Firm	Cluster	Firm	Cluster	Firm	Cluster
1	1	13	1	25	2	37	2
2	2	14	1	26	2	38	2
3	2	15	1	27	1	39	3
4	3	16	1	28	2	40	6
5	3	17	2	29	3	41	2
6	2	18	3	30	3	42	1
7	1	19	2	31	4	43	3
8	2	20	2	32	3	44	3
9	4	21	4	33	2	45	6
10	1	22	1	34	2	46	4
11	5	23	1	35	3	47	3
12	6	24	2	36	6		

Cluster interpretation was done next based on the meaning of the factors resulting from the factorial analysis previously run. The mean factor score and standard deviation of each cluster are displayed in the next table and the boxplots show the score distribution for each cluster.

Table 38 Scale of the cluster's importance/contribution - Cluster mean and standard deviation

Cluster		Factor 1	Factor 2	Factor 3
1	Mean	3.2	2.2	4.1
	Standard deviation	0.3	0.6	0.5
2	Mean	3.3	3.1	3.4
	Standard deviation	0.2	0.2	0.3
3	Mean	3.1	2.2	2.5
	Standard deviation	0.5	0.3	0.2
4	Mean	4.1	1.5	3.2
	Standard deviation	0.2	0.4	0.5
5	Mean	-0.4	3.0	3.5
	Standard deviation			
6	Mean	4.2	3.8	3.6
	Standard deviation	0.3	0.4	1.1

Figure 16 Scale of the cluster's importance/contribution - Cluster boxplots



One should notice that most firms in our sample (38) are included in one of the three first clusters, cluster 5 has one single firm whereas clusters 4 and 6 have 4 firms each. Cluster 1 has a very high score on factor 3, high score on factor 1 and a moderate score on factor 2, score values range between 4.1 and 2.2. So, the 11 firms in this cluster agree that the Footwear's Cluster (FC) is very important and contributes highly for factor "Networking and Cooperation for International Markets". It is also important and contributes for the factor "Resources and Skills for Productivity and Notoriety". Still in their opinion the FC has a small importance/contribution for factor "Innovation and R&D for Marketing in International Markets".

Cluster 2 is the biggest one with 16 firms. This cluster registers high scores on all factors (1, 2 and 3) and the lowest dispersion - score's value range between 3.1 and 3.4. These firms agree that the Footwear's cluster is important and contributes for the three factors previously identified: "Resources and Skills for Productivity and Notoriety"; "Innovation and R&D for Marketing in International Markets"; "Networking and Cooperation for International Markets". However, in this cluster, firms value relatively more factor 2 attributing the second highest score among all clusters.

Cluster 3 has a high score on factor 1 and moderate scores on factors 2 and 3, score values range between 2.2 and 3.1. The 11 firms agree that the Footwear's Cluster is important for the acquisition/access of resources (financial and human) and professional skills (Design) which are associated with increased productivity and reputation of the sector. Still, this is a relatively low score compared with the other clusters. The same applies to factor 2. Finally, this cluster, among all, attributes the lowest value to "Networking and Cooperation for International Activities".

Cluster 4 has a very high score on factor 1, a high score on factor 3 and a very low score on factor 2 (the lowest among all clusters): score values range between 1.5 and 4.1. The 4 firms in this cluster strongly agree in the importance/contribution of the Footwear's Cluster for the factor: "Resources and Skills for the Productivity and Notoriety". In contrast, they do not recognize the FC as being important to, or contributing to Innovation and R&D, acquisition of Marketing skills, and knowledge share on foreign

markets. They have an opinion similar to the other clusters about "Networking and Cooperation for International Activities"

Cluster 5 has one single firm that stands out for attributing an extremely low score to factor 1 (the lowest among all factors and clusters). It shows relatively high scores on factors 2 and 3. This firm considers that the FC is not important at all for the acquisition/access of "Resources and Skills for Productivity and Notoriety". But has a relatively positive opinion on the importance, and contribution of FC to factor 2 and 3: "Innovation and R&D for Marketing in International Markets" and "Networking and Cooperation for International Activities".

Cluster 6 has a very high score on factor 1 (the highest among all clusters and factors) and high scores on factor 2 (also the highest score among all clusters) and on factor 3 (the second highest): score values range from 3.6 to 4.2. Firms in Group 6 (4 firms) strongly agree that the Footwear Cluster is important and contributes to the acquisition/access of resources (financial and human) and professional skills (Design) which in turn are associated with productivity of firms and reputation of the sector. They also agree on the importance/contribution of the Footwear Cluster to innovation, professional skills in Marketing, R&D and knowledge share about foreign markets. Finally, the Footwear Cluster is a mean of cooperation and networking between firms and various entities and institutions which in turn may ease the participation in international fairs and activities.

It is remarkable that firms' heterogeneity is again revealed, now in terms of their assessment on the importance and contribution that the footwear cluster has to the development of critical factors for their internationalization. Despite their differences, one may say that there is a relative convergence of opinions on the importance of the FC for factors 3 and 1, and more dispersion on the importance of the FC for factor 2.

3.5. Cluster's important features/qualities/actions

Recall that the same firm may mark several features (all that apply). Therefore, the next table shows the number of features marked and not the number of firms (which explains why the total is not 47). The most important features are Cluster's good reputation (19.3%), International Sector's Disclosure (17.9%), Share of International experience among firms (12.4%) and Cluster that invest in Innovation (11%). Less important, but still very relevant, are Share of know-how among firms (9%), Access to Resources (8.3%) and R&D's knowledge share (6.9%). Little important are Existence of Multinationals producing in Portugal (4.8%), Existence of Networking / Cooperation (4.1%), Domestic competitiveness among firms (3.4%) and Existence of Multinationals outsourcing in Portugal (2.8%).

Although exists a large number of different combinations of features (since each firm marks all that apply), the most frequent combinations involve simultaneously three of the most important (i.e., frequent) features mentioned above such as Cluster's good reputation, International Sector's Disclosure, Share of International experience among firms and Cluster that invest in Innovation.

Table 39 Cluster's important features/qualities/actions

Features/qualities/actions	n	%
Cluster's good reputation	28	19.3
International Sector's Disclosure	26	17.9
Share of International experience among firms	18	12.4
Cluster that invest in Innovation	16	11.0
Share of know-how among firms	13	9.0
Access to Resources	12	8.3
R&D's knowledge share	10	6.9
Existence of Multinationals producing in Portugal	7	4.8
Existence of Networking / Cooperation	6	4.1
Existence of Multinationals outsourcing in Portugal	4	2.8
Total	145	100.0

Conclusion and Discussion

The main objective of this dissertation is to study the influence/impact that industrial clusters have on the internationalization process of its firms, in particular which activities, characteristics or mechanism/channels are important for that matter. Another objective is to understand how firms' heterogeneity may condition such interaction. This is important because even if firms inside an industrial cluster, have access to similar resources, shared knowledge and international opportunities, doesn't mean that all firms will have the same capacity to internationalize, given their internal differences: productivity; financial and human resources; business mindset; propensity to export and so on.

The literature review focus on four main areas that are the theoretical framework of this dissertation. First, the concept of firms' heterogeneity in the context of internationalization highlights the importance that productivity, and, competitiveness have in the international success of individual firms. Then, it presents the relation between clusters and internationalization - via competitiveness, networking and resources.

This literature review shows that within a cluster there are a complex set of interconnections that may be important for firms' internationalization, namely: between firm's productivity and their propensity to export; the firms' rivalry and their competitiveness; the cluster's governance including composition, network density and degree of knowledge sharing.

Finally, the study also reviews empirical findings and the whole exercise ends with a set of 8 hypothesis that are the core of the questionnaire used to study the Footwear's Cluster in Portugal.

To be able to conclude on the influence that clusters have on the internationalization process of its firms, the Portuguese footwear sector was chosen as case study due to its characteristics as described in chapter 2.3. The survey was sent to a representative sample of firms in the footwear sector and the result was 47 valid responses, which constitute the basis for our conclusions.

From the questionnaire, the first set of conclusions refer to the agreement, or not, of respondents, with general statements about the Cluster's role in the internationalization of its firms. The results, previously discussed and explained in chapter 3, show that apart H5 all other hypotheses are confirmed H1a, H1b, H1c, H2, H3, H4, H6, H7 and H8:

- Share of important and rare resources among firms
- Knowledge share
- Cooperative relations and networking
- International experience of firms influence the decision of internationalize of other firms
- Presence of Leader firms
- Degree of domestic rivalry among firms
- Cluster's good reputation
- Cluster's innovative capacity
- Heterogeneity of firms as an impact on the level of the firms' internationalization

The hypothesis that was not confirmed refers to the presence of Multinationals. The presence of Multinationals inside the cluster is not an important factor to the internationalization of other firms. The explanation for this is related with the nature of the internationalization process of these firms. The Portuguese footwear sector is an international sector but its foreign activities and networking are through exports and not through foreign direct investment (FDI), which explain why this variable is not important for the internationalization process of the respondent firms.

The second set of conclusions is about the importance that certain internal features have in the internationalization process of each respondent's firm. The following features are considered very important to the internationalization of firms:

- Have qualified human resources
- Have linguistic competences
- Knowledge in foreign markets
- Development of an international networking

The following features are considered important to the internationalization of firms:

- Have own brand
- Access to financial resources
- Invest in Marketing
- Invest in Design
- Invest in I&D
- Invest in Innovation
- Development of new products
- Attendance in International Fairs
- Relationship with technological centers
- Relationship with institutions that promote the internationalization

On the other hand, the following features are considered indifferent to the internationalization of firms:

- Relationship with firms inside the same cluster
- Relationship with universities

The third set of conclusions is about the cluster's importance/contribution for some features that in turn can help firms to internationalize. The respondents valued as important the contribution that the Footwear Cluster has for the following features:

- Acquisition of qualified human resources
- Access to financial resources
- Improvement of the firm's productivity
- Notoriety of the footwear sector
- Access to innovation
- Acquisition of competences of Marketing Strategies
- Acquisition of competences of Design Strategies
- Acquisition of competences of R&D
- Access to networking
- Attendance in International Fairs

On the other hand, the feature “Access to a knowledge share about foreign markets” is not considered a cluster’s contribution.

If we analyze together the two last sets of conclusions - one about which main internal features are important to the internationalization process of firms, and, the other one about the features with which the Footwear's Cluster provides to its firms. Then, it is possible to conclude that this Cluster, in fact, has influence on the Internationalization process of its firms mainly through the access to qualified human resources, access to financial means, access to international and national networking, access to innovation, acquisition of competences in Marketing and Design Strategies, acquisition of competences of R&D and through participation in International Fairs.

Regarding to the limitations of these dissertation is the fact that these conclusions cannot be generalized as most likely they vary from sector to sector because each sector has its own characteristics. So, for further research it will be interesting to investigate other clusters in sectors with different degree of internationalization and evaluate the average conclusions.

Other limitation of this dissertation is about the rivalry among firms that was not specified. For further research it will be interesting observe the type of competitiveness: price, quantity, quality, products, customer service and others.

About the heterogeneity of firms, there is some limitations because it is not possible to identify which specific internal features influence the different levels of internationalization among firms.

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Appendices

Appendix A: Survey

"A Influência do Cluster do Calçado Português na Internacionalização das suas empresas"

*Obrigatório

1. Função que exerce na Empresa: *

.....

2. N.º de Anos da Empresa: *

.....

3. Atividade da Empresa (CAE): *

.....

4. Há quantos anos a Empresa tem Atividade Internacional (Exportações ou outro): *

.....

5. Localização da Empresa: *

Marcar apenas uma oval.

☐ Pólo São João da Madeira

☐ Pólo Felgueiras

☐ Pólo Guimarães

☐ Outro:

6. N.º de trabalhadores: *

Marcar apenas uma oval.

☐ menos de 10

☐ entre 10- 49

☐ entre 50 - 249

☐ 250 ou mais

7. Volume de Negócios: *

Marcar apenas uma oval.

☐ menos que 2M€

☐ entre 2- 9M€

☐ entre 10 - 49M€

☐ 50M€ ou mais

8. N.º de mercados para onde exporta: *

Marcar apenas uma oval.

- ☐ 0
- ☐ 1
- ☐ 2 - 5
- ☐ 5 - 10
- ☐ mais de 10

9. Peso das Exportações nas vendas (%): *

.....

10. Principal Mercado de Exportação (% das exportações): *

.....

11. % de Recursos Humanos com Ensino Superior: *

.....

12. Participação em Feiras Internacionais? *

Marcar apenas uma oval.

- ☐ Não
- ☐ Sim

13. Marca (s) Própria (s): *

Marcar apenas uma oval.

- ☐ Não
- ☐ Sim

14. Se sim, qual a % de Vendas com Marca (s) Própria (s):

.....

15. É subcontratada? *

Marcar apenas uma oval.

- ☐ Não
- ☐ Sim

16. Se sim, qual a % de vendas em subcontratação?

.....

17. Faz subcontratação? *

Marcar apenas uma oval.

- ☐ Não
- ☐ Sim

18. Faz Investimento em I&D? *

Marcar apenas uma oval.

- ☐ Não
☐ Sim

19. Faz Investimento em Marketing? *

Marcar apenas uma oval.

- ☐ Não
☐ Sim

20. Investe em Design? *

Marcar apenas uma oval.

- ☐ Não
☐ Sim

21. Identifique as entidades geograficamente próximas, com quem interage com alguma frequência e que são relevantes para os Negócios da Empresa: *

Marque todas que se aplicam.

- ☐ Fabricantes de calçado
☐ Fabricantes de componentes
☐ Fabricantes de acessórios de couro
☐ Fornecedores de equipamento
☐ Fornecedor de matérias-primas
☐ Centro de formação Profissional da Ind^a do Calçado
☐ Outras Escolas profissionais
☐ Centro Tecnológico de calçado
☐ Empresa de logística internacional
☐ Empresa de marketing internacional
☐ Empresas de design/ moda
☐ Agentes exportadores
☐ AICEP
☐ APICCAPS
☐ IAPMEI
☐ Bancos
☐ Outro:

Considerando a definição de Cluster do calçado: Concentração geográfica de Empresas, Instituições, etc, da área do calçado, que se interligam entre si devido à aproximação existente. Os principais Atores dentro do Cluster são as Empresas de Calçado propriamente ditas, Fornecedores de Equipamento, Fabricantes de equipamentos, Curtumes, Artigos de pele, Componentes, Calçado – F. Comerciais, Universidades, INESC Porto, Instituições de I&D, etc.

22. Sinalize o seu grau de concordância com as afirmações que se seguem: *

Marcar apenas uma oval por linha.

	Discordo Totalmente	Discordo	Sem Opinião	Concordo	Concordo Totalmente
A partilha de conhecimento dentro do Cluster incentiva a internacionalização das suas empresas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A partilha de recursos importantes e raros entre empresas do mesmo cluster facilita o processo de internacionalização das mesmas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
As Relações de Cooperação e Networking dentro do Cluster estão positivamente associadas ao processo de internacionalização das suas empresas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A experiência internacional das empresas dentro do cluster aumenta o interesse/ vontade das menos experientes em iniciar atividades internacionais	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A diversidade das características das empresas dentro do Cluster faz com que cada uma delas tenha diferentes capacidades de internacionalização	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A presença de Empresas de Referência dentro do Cluster influencia positivamente a internacionalização de outras empresas pertencentes ao Cluster	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A intensidade competitiva entre as empresas do Cluster influencia positivamente o processo de internacionalização das mesmas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A presença de Multinacionais estrangeiras dentro do Cluster tem impacto positivo na internacionalização das restantes empresas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A boa reputação internacional do Cluster funciona como incentivo para a internacionalização das suas empresas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A boa reputação internacional do Cluster facilita o processo de internacionalização das suas empresas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

A Capacidade de
inovação do Cluster tem
um impacto positivo na
internacionalização das
suas empresas

☐ ☐ ☐ ☐ ☐

23. Indique o nível de importância que cada assunto tem para o processo de internacionalização da sua empresa: *

Marcar apenas uma oval por linha.

	Nada Importante	Pouco Importante	Indiferente	Importante	Muito Importante
Possuir Marca(s) Própria(s)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Possuir Recursos Humanos Qualificados	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Possuir Competências Linguísticas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Aceder a Recursos Financeiros	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Investir em Marketing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Investir em Design	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Investir em I&D	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Investir em Inovação	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desenvolver Novos Produtos	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Conhecer os Mercados Externos	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desenvolver um Rede de Contactos Internacionais	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Participar em Feiras Internacionais	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ter Relações próximas com Empresas do Cluster	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ter Relações próximas com Universidades	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ter Relações próximas com Centros Tecnológicos	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ter Relações próximas com Instituições de Promoção da Internacionalização	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

24. Sinalize, de acordo com a sua opinião, qual a importância/contributo que o Cluster tem para cada assunto que se segue: *

Marcar apenas uma oval por linha.

	Nada Importante	Pouco Importante	Indiferente	Importante	Muito Importante
Aquisição de Recursos Humanos Especializados	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Acesso a Recursos Financeiros	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Melhoria da Produtividade das Empresas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Notoriedade do Setor do Calçado	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Acesso à Inovação	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Aquisição de competências a nível de estratégias de Marketing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Aquisição de competências a nível de estratégias de Design	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Aquisição de competências a nível de I&D	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Acesso a partilha de conhecimentos sobre os mercados externos	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Acesso a Redes de Cooperação (Networking)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Participação em Feiras Internacionais	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Participação em Atividades Internacionais	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

25. Sinalize 3 características/ atributos/ ações importantes que o Cluster deveria ter para que funcione como facilitador e impulsionador no processo de internacionalização da sua Empresa: *

Marque todas que se aplicam.

- ☐ Boa Reputação do Cluster
- ☐ Cluster que aposta na Inovação
- ☐ Acesso a Recursos
- ☐ Existência de Networking / Cooperação
- ☐ Partilha de know-how entre as empresas
- ☐ Partilha de experiência Internacional entre as empresas
- ☐ Existência de Multinacionais a produzir em Portugal
- ☐ Existência de Multinacionais a subcontratar em Portugal
- ☐ Promoção Internacional do Setor
- ☐ Competitividade doméstica entre as empresas
- ☐ Partilha de conhecimento a nível de I&D

Appendix B: Opinion on the Cluster

First, in order to check whether these data are appropriate for a factorial analysis, the correlation matrix of the responses to the questions is displayed below showing many moderate and some high correlations.

Table 40 Scale of the opinion on the Cluster - Correlation matrix

Question	Question										
	1	2	3	4	5	6	7	8	9	10	11
1	1.000	0.630	0.507	0.541	0.101	0.234	0.296	-	0.268	0.367	0.193
2	0.630	1.000	0.697	0.412	0.146	0.138	0.132	0.046	0.344	0.525	0.458
3	0.507	0.697	1.000	0.367	0.046	0.105	0.052	-	0.353	0.475	0.510
4	0.541	0.412	0.367	1.000	0.328	0.224	0.253	-	0.238	0.371	0.230
5	0.101	0.146	0.046	0.328	1.000	0.295	0.089	0.041	0.325	0.193	0.406
6	0.234	0.138	0.105	0.224	0.295	1.000	0.501	0.353	0.507	0.431	0.381
7	0.296	0.132	0.052	0.253	0.089	0.501	1.000	0.233	0.298	0.303	0.045
8	-	0.046	-	-	0.041	0.353	0.233	1.000	0.032	-	0.000
9	0.268	0.344	0.353	0.238	0.325	0.507	0.298	0.032	1.000	0.703	0.574
10	0.367	0.525	0.475	0.371	0.193	0.431	0.303	-	0.703	1.000	0.524
11	0.193	0.458	0.510	0.230	0.406	0.381	0.045	0.000	0.574	0.524	1.000

Furthermore, the Kaiser-Meyer-Olkin measure of sampling adequacy was also computed and is displayed in the next table for each question and for the complete scale. The total value is 0.788 which is good and the values for each question are also good or at least satisfactory. In fact, the latter are all much higher than 0.5 (higher than 0.7 in most cases) which shows that all the questions may be used because they fit in the structure defined by the others. As a result, the factorability of the correlation matrix is good which means that these data are appropriate for a factor analysis.

Scale of the opinion on the Cluster

Table 41 KMO measure of sampling adequacy

Question	KMO
1	0.793
2	0.788
3	0.822
4	0.758
5	0.675
6	0.755
7	0.767
8	0.670
9	0.706
10	0.666
11	0.788
Total	0.735

Therefore, a factor analysis with factor extraction by principal components was run. The number of factors to be retained in the analysis is required first. The usual rules to select that number lead to different solutions as displayed in the next table. Kaiser's rule selects the factors whose eigenvalues are larger than 1 which leads to a solution with 4 factors (a reasonable number), since the 4th factor is the last to fulfill that condition, explaining 74.4% of the total variance (a good proportion). Pearson's rule selects a number of factors such that the proportion of the explained variance is at least 80%, leading to a solution with 5 factors and explaining 82.3% of the total variance which is also acceptable. The rule based on the scree plot retains the number of factors with the largest decrease of the explained variance (Cattel's rule), leading to a solution with 6 factors (explaining 86.3% of the total variance) but this number of factors is clearly too large. Thus, the solutions with 4 and 5 factors were tried and the latter was adopted because the results were better both in terms of interpretation and meaning of the factors and in terms of the goodness of fit.

Table 42 Scale of the opinion on the Cluster - Eigenvalues and variance explained by the factors

Factor	Eigenvalue	% Variance	Cumulative %
1	4.136	37.603	37.603
2	1.729	15.717	53.320
3	1.250	11.362	64.682
4	1.072	9.750	74.432
5	0.867	7.878	82.310
6	0.439	3.994	86.304
7	0.429	3.900	90.204
8	0.381	3.460	93.664
9	0.277	2.518	96.183
10	0.232	2.113	98.296
11	0.187	1.704	100.000

Appendix C: Factor Model – Opinion on the Cluster

In order to assess the quality of the factor model, the next table displays the residual matrix (differences between the observed correlations and the estimated or reproduced correlations by the factor model with the retained 5 factors). There are only 18 (32%) nonredundant residuals with absolute value greater than 0.05, which shows a very good fit (it is commonly accepted that a proportion of less than 50% shows a good fit). Furthermore, the Goodness of fit index (GFI) is 0.861 showing an acceptable fit, almost good (a good fit occurs for a GFI of at least 0.9) and the *Root mean square residual* (RMSR) is 0.05 which shows a good fit (it is commonly accepted that an RMSR less than 0.05 shows a very good fit). In short, all the coefficients show a good fit.

Table 43 Scale of the opinion on the Cluster - Residual matrix

Question	Question										
	1	2	3	4	5	6	7	8	9	10	11
1		-0.044	-0.048	-0.128	0.027	0.037	-0.061	-0.020	0.045	-0.049	0.013
2	-0.044		-0.100	-0.065	0.042	-0.037	0.049	-0.031	-0.006	0.008	-0.017
3	-0.048	-0.100		0.022	0.005	0.037	0.040	-0.020	-0.009	-0.042	-0.025
4	-0.128	-0.065	0.022		-0.103	0.009	-0.062	0.071	0.004	0.042	0.008
5	0.027	0.042	0.005	-0.103		-0.062	0.042	-0.009	0.019	0.036	-0.071

6	0.037	- 0.037	0.037	0.009	- 0.062		- 0.115	- 0.075	- 0.069	- 0.059	0.009
7	- 0.061	0.049	0.040	- 0.062	0.042	- 0.115		- 0.030	- 0.040	- 0.045	0.082
8	- 0.020	- 0.031	- 0.020	0.071	- 0.009	- 0.075	- 0.030		0.048	0.061	- 0.035
9	0.045	- 0.006	- 0.009	0.004	0.019	- 0.069	- 0.040	0.048		- 0.059	- 0.091
10	- 0.049	0.008	- 0.042	0.042	0.036	- 0.059	- 0.045	0.061	- 0.059		- 0.085
11	0.013	- 0.017	- 0.025	0.008	- 0.071	0.009	0.082	- 0.035	- 0.091	- 0.085	

Finally, the scale's reliability and internal consistency was also assessed using Cronbach's Alpha and the composite reliability whose values are displayed in the next table for each factor. Alfa's value for the total questionnaire is 0.804 which is high and shows a strong reliability and internal consistency (good reliability is usually considered for a value of at least 0.8). The first two factors show a good reliability, but the third shows a value of Alfa that is only acceptable (however, it is well known that, when a dimension includes few items, as this one, since it includes 2 questions only, the value of Alfa is often low but that does not mean a low reliability). Note also that Alpha was not computed for the last two factors because they include only one question.

A factor's composite reliability estimates the internal consistency of its questions and it is generally accepted that a composite reliability of at least 0.7 shows an appropriate construct reliability, even though lower values can still be acceptable. Therefore, we conclude that the composite reliability is high for all the first three factors (as for Alpha, it was not possible to compute the reliability of the last two factors), showing an appropriate construct reliability.

As a conclusion, both the total questionnaire and the factors show a good reliability and internal consistency.

Table 44 Scale of the opinion on the Cluster - Reliability of the questionnaire

Factors	Alpha	CR
1 – Networking and knowledge and resources sharing among firms	0.813	0.882
2 – Cluster's International Reputation	0.819	0.892
3 – The Leader firms' effect and competitiveness	0.662	0.810

Appendix D: Importance for the internationalization process

In order to check whether these data are appropriate for a factorial analysis, the correlation matrix of the responses to the questions is displayed below showing many moderate and some high correlations.

Table 45 Scale of the importance for the internationalization process - Correlation matrix

Item	Item							
	1	2	3	4	5	6	7	8
1	1.000	0.343	0.261	0.040	0.440	0.260	0.050	0.094
2	0.343	1.000	0.738	0.373	0.309	0.288	0.331	0.357
3	0.261	0.738	1.000	0.511	0.361	0.244	0.217	0.249
4	0.040	0.373	0.511	1.000	0.247	0.235	0.139	0.363
5	0.440	0.309	0.361	0.247	1.000	0.512	0.387	0.330
6	0.260	0.288	0.244	0.235	0.512	1.000	0.483	0.404
7	0.050	0.331	0.217	0.139	0.387	0.483	1.000	0.544
8	0.094	0.357	0.249	0.363	0.330	0.404	0.544	1.000
9	0.171	0.368	0.364	0.369	0.325	0.467	0.215	0.405
10	0.146	0.411	0.450	0.469	0.355	0.587	0.408	0.304
11	0.090	0.456	0.479	0.394	0.303	0.496	0.432	0.384
12	0.393	0.432	0.383	0.232	0.408	0.146	0.167	0.038
13	0.135	0.316	0.404	0.603	0.409	0.127	0.134	0.138
14	0.337	0.020	0.017	0.123	0.272	0.239	0.044	0.158
15	0.097	0.311	0.359	0.399	0.469	0.152	0.282	0.215
16	0.090	0.244	0.087	0.394	0.188	0.084	0.213	0.252

Table 46 Scale of the importance for the internationalization process - Correlation matrix (cont.)

Item	Item							
	9	10	11	12	13	14	15	16
1	0.171	0.146	0.090	0.393	0.135	0.337	0.097	0.090
2	0.368	0.411	0.456	0.432	0.316	0.020	0.311	0.244
3	0.364	0.450	0.479	0.383	0.404	0.017	0.359	0.087
4	0.369	0.469	0.394	0.232	0.603	0.123	0.399	0.394

5	0.325	0.355	0.303	0.408	0.409	0.272	0.469	0.188
6	0.467	0.587	0.496	0.146	0.127	0.239	0.152	0.084
7	0.215	0.408	0.432	0.167	0.134	0.044	0.282	0.213
8	0.405	0.304	0.384	0.038	0.138	0.158	0.215	0.252
9	1.000	0.679	0.550	0.386	0.313	-0.085	0.061	-0.050
10	0.679	1.000	0.774	0.280	0.275	-0.166	0.138	-0.025
11	0.550	0.774	1.000	0.259	0.371	-0.117	0.229	0.034
12	0.386	0.280	0.259	1.000	0.532	0.057	0.200	0.047
13	0.313	0.275	0.371	0.532	1.000	0.247	0.572	0.253
14	-0.085	-0.166	-0.117	0.057	0.247	1.000	0.495	0.275
15	0.061	0.138	0.229	0.200	0.572	0.495	1.000	0.291
16	-0.050	-0.025	0.034	0.047	0.253	0.275	0.291	1.000

Furthermore, the Kaiser-Meyer-Olkin measure of sampling adequacy is displayed in the next table for each item and for the complete scale. The total value is 0.682 which is satisfactory and the values for each item are also good or at least satisfactory with a single exception which is low. In fact, the latter are all much higher than 0.5 (higher than 0.7 in half of the cases) with only one exception. As a result, the factorability of the correlation matrix is acceptable which means that these data are appropriate for a factor analysis.

Table 47 Scale of the importance for the internationalization process - KMO measure of sampling adequacy

Item	KMO		Item	KMO
1	0.617		9	0.765
2	0.714		10	0.701
3	0.743		11	0.785
4	0.613		12	0.718
5	0.702		13	0.709
6	0.734		14	0.454
7	0.654		15	0.653
8	0.578		16	0.535
			Total	0.682

Therefore, a factor analysis with factor extraction by principal components was run. In order to select the number of factors, Kaiser's rule (factors whose eigenvalues are larger than 1) selects 5 factors (a reasonable number), explaining 72.7% of the total variance (a good proportion). Pearson's rule (proportion of the explained variance of at least 80%) leads to a solution with 7 factors (a number a little large), explaining 82.6% of the total variance. The rule based on the scree plot, also known as Cattell's rule (factor with the largest decrease of the explained variance) leads to a solution with 5 factors (like Kaiser's rule). Thus, the solutions with 5 and 7 factors were tried and the former was adopted because the results were better both in terms of interpretation and meaning of the factors and in terms of the goodness of fit.

Table 48 Scale of the importance for the internationalization process - Eigenvalues and variance explained by the factors

Factor	Eigenvalue	% Variance	Cumulative %
1	5.556	34.722	34.722
2	2.097	13.104	47.826
3	1.558	9.739	57.566
4	1.413	8.829	66.395
5	1.005	6.283	72.677
6	0.827	5.166	77.843
7	0.754	4.712	82.555
8	0.615	3.846	86.401
9	0.484	3.025	89.426
10	0.398	2.489	91.915
11	0.363	2.268	94.183
12	0.285	1.779	95.962
13	0.213	1.332	97.294
14	0.203	1.267	98.561
15	0.137	0.857	99.418
16	0.093	0.582	100.000

Appendix E: Factor Model – Importance for the internationalization process

In order to assess the quality of the factor model, the next table displays the residual matrix. There are only 61 (50%) nonredundant residuals with absolute value greater than 0.05, which shows a good fit (recall that a proportion of less than 50% shows a good fit). Furthermore, the Goodness of fit index (GFI) is 0.835 showing an acceptable

fit, nearly good (recall that a good fit occurs for a GFI of at least 0.9) and the *Root mean square residual* (RMSR) is 0.067 which shows a good fit (it is commonly accepted that an RMSR less than 0.1 shows a good fit). In short, all the coefficients show an acceptable fit.

Table 49 Scale of the importance for the internationalization process - Residual matrix

Item	Item							
	1	2	3	4	5	6	7	8
1		-0.073	-0.056	0.126	-0.078	-0.032	-0.078	0.024
2	-0.073		-0.018	-0.064	-0.037	0.048	-0.025	-0.039
3	-0.056	-0.018		-0.010	0.033	0.051	-0.028	-0.037
4	0.126	-0.064	-0.010		-0.021	0.064	-0.110	0.037
5	-0.078	-0.037	0.033	-0.021		-0.055	0.010	-0.011
6	-0.032	0.048	0.051	0.064	-0.055		-0.096	-0.118
7	-0.078	-0.025	-0.028	-0.110	0.010	-0.096		-0.092
8	0.024	-0.039	-0.037	0.037	-0.011	-0.118	-0.092	
9	0.017	0.002	-0.059	0.016	-0.055	-0.050	-0.110	0.115
10	0.066	-0.004	-0.014	0.040	-0.026	-0.001	-0.026	-0.105
11	0.049	0.006	-0.008	-0.094	-0.049	-0.034	-0.014	-0.059
12	-0.117	-0.044	-0.142	-0.051	-0.024	-0.036	0.169	0.062
13	0.010	-0.002	-0.063	-0.062	-0.009	-0.015	0.088	0.047
14	-0.004	0.059	0.077	0.031	-0.190	0.029	-0.096	0.019
15	-0.052	0.075	0.070	-0.139	0.016	-0.057	0.071	-0.049
16	0.061	-0.077	-0.153	0.022	0.023	0.058	-0.073	-0.121

Table 50 Scale of the importance for the internationalization process - Residual matrix (cont.)

Item	Item							
	9	10	11	12	13	14	15	16
1	0.017	0.066	0.049	-0.117	0.010	-0.004	-0.052	0.061
2	0.002	-0.004	0.006	-0.044	-0.002	0.059	0.075	-0.077
3	-0.059	-0.014	-0.008	-0.142	-0.063	0.077	0.070	-0.153
4	0.016	0.040	-0.094	-0.051	-0.062	0.031	-0.139	0.022
5	-0.055	-0.026	-0.049	-0.024	-0.009	-0.190	0.016	0.023

6	-0.050	-0.001	-0.034	-0.036	-0.015	0.029	-0.057	0.058
7	-0.110	-0.026	-0.014	0.169	0.088	-0.096	0.071	-0.073
8	0.115	-0.105	-0.059	0.062	0.047	0.019	-0.049	-0.121
9		-0.057	-0.116	0.002	-0.022	0.062	-0.054	0.095
10	-0.057		0.004	-0.056	-0.060	0.030	0.011	0.071
11	-0.116	0.004		-0.040	0.010	0.044	0.040	0.016
12	0.002	-0.056	-0.040		0.039	-0.057	-0.061	0.081
13	-0.022	-0.060	0.010	0.039		-0.058	-0.075	0.006
14	0.062	0.030	0.044	-0.057	-0.058		-0.044	-0.073
15	-0.054	0.011	0.040	-0.061	-0.075	-0.044		-0.168
16	0.095	0.071	0.016	0.081	0.006	-0.073	-0.168	

Finally, Cronbach's Alpha and the composite reliability values are displayed in the next table for each factor. Alfa's value for the total questionnaire is 0.857 which is high and shows a strong reliability and internal consistency (recall that good reliability is usually considered for a value of at least 0.8). The first and the fourth factors show a high reliability, the second factor shows a good reliability, the third and the fifth factor show an acceptable reliability and the third (recall that, when a dimension includes few items, as the third one, since it includes 3 items only, the value of Alfa is often low but that does not mean a low reliability).

Composite reliability is very high for the first, the second and the fourth factors and good for the third and the fifth, showing an appropriate construct reliability (recall that it is generally accepted that a composite reliability of at least 0.7 shows an appropriate construct reliability, even though lower values can still be acceptable).

As a conclusion, both the total questionnaire and the factors show a good or at least acceptable reliability and internal consistency.

Table 51 Scale of the importance for the internationalization process - Reliability of the questionnaire

Factors	Alpha	CR
1 – Design and product development versus international business capabilities	0.851	0.916
2 – Networking with firms and the technological center of the Footwear Industry, plus accessing to financial resources are crucial to the	0.765	0.859

internationalization of its firms		
3 – Investing in R&D and Innovation to promote/expand business in international markets	0.579	0.717
4 – Qualified Human Resources and Linguistic capabilities for International Business	0.845	0.913
5 – The promotion of own brand in international fairs can initiate or enhance the international activity of firms	0.645	0.739

Appendix F: Cluster's importance/contribution

In order to check whether these data are appropriate for a factorial analysis, the correlation matrix of the responses to the questions is displayed below showing many moderate and some high correlations.

Table 52 Scale of the cluster's importance/ contribution - Correlation matrix

Item	Item					
	1	2	3	4	5	6
1	1.000	0.650	0.584	0.488	0.403	0.457
2	0.650	1.000	0.685	0.682	0.331	0.585
3	0.584	0.685	1.000	0.760	0.282	0.554
4	0.488	0.682	0.760	1.000	0.369	0.596
5	0.403	0.331	0.282	0.369	1.000	0.664
6	0.457	0.585	0.554	0.596	0.664	1.000
7	0.568	0.684	0.514	0.709	0.383	0.525
8	0.463	0.522	0.408	0.392	0.599	0.570
9	0.535	0.535	0.407	0.556	0.674	0.588
10	0.388	0.210	0.323	0.230	0.408	0.396
11	0.276	0.324	0.418	0.448	0.408	0.498
12	0.465	0.348	0.479	0.477	0.543	0.389

Table 53 Scale of the cluster's importance/contribution - Correlation matrix (cont.)

Item	Item					
	7	8	9	10	11	12
1	0.568	0.463	0.535	0.388	0.276	0.465
2	0.684	0.522	0.535	0.210	0.324	0.348
3	0.514	0.408	0.407	0.323	0.418	0.479
4	0.709	0.392	0.556	0.230	0.448	0.477
5	0.383	0.599	0.674	0.408	0.408	0.543
6	0.525	0.570	0.588	0.396	0.498	0.389
7	1.000	0.429	0.714	0.199	0.389	0.336
8	0.429	1.000	0.616	0.255	0.331	0.416
9	0.714	0.616	1.000	0.268	0.315	0.513
10	0.199	0.255	0.268	1.000	0.350	0.704
11	0.389	0.331	0.315	0.350	1.000	0.420
12	0.336	0.416	0.513	0.704	0.420	1.000

Futhermore, the Kaiser-Meyer-Olkin measure of sampling adequacy is displayed in the next table for each item and for the complete scale. The total value is 0.826 which is high and the values for each item are also high, very high or at least satisfactory (they are all much higher than 0.5 and are higher than 0.8 in most items). As a result, the factorability of the correlation matrix is very good which means that these data are appropriate for a factor analysis.

Table 54 Scale of the cluster's importance/contribution - KMO measure of sampling adequacy

Item	KMO	Item	KMO
1	0.897	7	0.792
2	0.893	8	0.918
3	0.851	9	0.825
4	0.821	10	0.660
5	0.831	11	0.888
6	0.821	12	0.721
		Total	0.826

Therefore, a factor analysis with factor extraction by principal components was run. In order to select the number of factors, Kaiser's rule (factors whose eigenvalues are larger than 1) selects 3 factors (a reasonable number), explaining 72.4% of the total variance (a good proportion). Pearson's rule (proportion of the explained variance of at least 80%) leads to a solution with 5 factors (a number a little large), explaining 84.1% of the total variance. The rule based on the scree plot, also known as Cattell's rule (factor with the largest decrease of the explained variance) leads to a solution with 5 factors (like Pearson's rule). Thus, the solutions with 3 and 5 factors were tried and the former was adopted because the results were better both in terms of interpretation and meaning of the factors and in terms of the goodness of fit.

Table 55 Scale of the cluster's importance/contribution - Eigenvalues and variance explained by the factors

Factor	Eigenvalue	% Variance	Cumulative %
1	6.238	51.987	51.987
2	1.391	11.596	63.583
3	1.054	8.780	72.363
4	0.813	6.771	79.134
5	0.591	4.925	84.059
6	0.476	3.970	88.028
7	0.441	3.676	91.704
8	0.336	2.803	94.507
9	0.226	1.880	96.387
10	0.175	1.460	97.847
11	0.151	1.261	99.107
12	0.107	0.893	100.000

Appendix G: Factor Model – Cluster's importance/ contribute

In order to assess the quality of the factor model, the next table displays the residual matrix. There are only 28 (42%) nonredundant residuals with absolute value greater than 0.05, which shows a good fit (recall that a proportion of less than 50% shows a good fit). Furthermore, the Goodness of fit index (GFI) is 0.86 showing an acceptable good, almost good (recall that a good fit occurs for a GFI of at least 0.9) and the *Root mean square residual* (RMSR) is 0.066 which shows a good fnit (it is commonly accepted that an RMSR less than 0.1 shows a good fit). In short, all the coefficients show an acceptable fit.

Table 56 Scale of the cluster's importance/ contribution - Residual matrix

Item	Item					
	1	2	3	4	5	6
1		0.020	-0.048	-0.159	-0.007	-0.101
2	0.020		-0.043	-0.093	-0.005	-0.002
3	-0.048	-0.043		-0.013	0.043	0.036
4	-0.159	-0.093	-0.013		0.047	0.016
5	-0.007	-0.005	0.043	0.047		0.016
6	-0.101	-0.002	0.036	0.016	0.016	
7	-0.027	-0.063	-0.128	-0.005	-0.032	-0.080
8	0.011	0.044	0.076	-0.044	-0.107	-0.061
9	0.002	-0.054	-0.026	0.013	-0.051	-0.109
10	0.041	0.052	-0.050	-0.047	-0.051	0.017
11	-0.151	-0.062	-0.046	0.010	0.004	0.056
12	-0.012	0.003	-0.016	0.039	-0.024	-0.137

Table 57 Scale of the cluster's importance/contribution - Residual matrix (cont.)

Item	Item					
	7	8	9	10	11	12
1	-0.027	0.011	0.002	0.041	-0.151	-0.012
2	-0.063	0.044	-0.054	0.052	-0.062	0.003
3	-0.128	0.076	-0.026	-0.050	-0.046	-0.016
4	-0.005	-0.044	0.013	-0.047	0.010	0.039
5	-0.032	-0.107	-0.051	-0.051	0.004	-0.024
6	-0.080	-0.061	-0.109	0.017	0.056	-0.137
7		-0.109	0.074	0.074	0.030	0.016
8	-0.109		-0.109	0.004	-0.011	0.009
9	0.074	-0.109		0.019	-0.068	0.081
10	0.074	0.004	0.019		-0.149	-0.073
11	0.030	-0.011	-0.068	-0.149		-0.128
12	0.016	0.009	0.081	-0.073	-0.128	

Finally, Cronbach's Alpha and the composite reliability values are displayed in the next table for each factor. Alfa's value for the total questionnaire is 0.912 which is very high

and shows a very strong reliability and internal consistency (recall that good reliability is usually considered for a value of at least 0.8). The first and the second factors show a high reliability and the third one shows a good reliability.

Composite reliability is very high for the first and the second factors and high for the third, showing a very good construct reliability (recall that it is generally accepted that a composite reliability of at least 0.7 shows an appropriate construct reliability, even though lower values can still be acceptable).

As a conclusion, both the total questionnaire and the factors show a good reliability and internal consistency.

Table 58 Scale of the cluster's importance/contribution - Reliability of the questionnaire

Factors	Alpha	CR
1 – Resources and Skills for Productivity and Notoriety	0.889	0.940
2 – Innovation and R&D for Marketing in International Markets	0.864	0.920
3 – Networking and Cooperation for International Activities	0.721	0.846